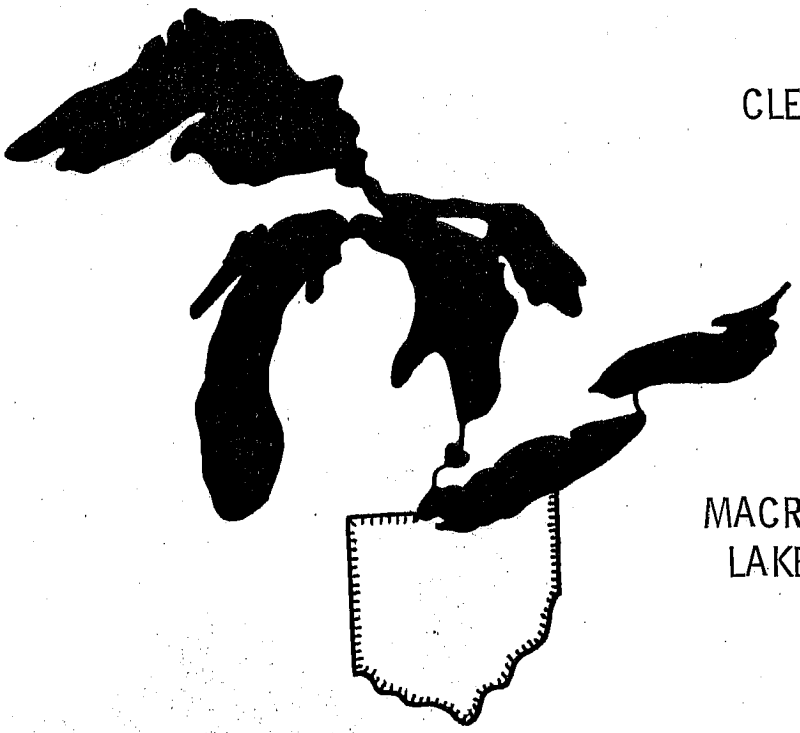

CLEAR TECHNICAL REPORT NO. 53

MACROBENTHIC ECOLOGY OF WESTERN LAKE ERIE AT LOCUST POINT, OHIO

Prepared by

Harold N. Cones, Jr.
Environmental Studies Center
Bowling Green State University

THE OHIO STATE UNIVERSITY
CENTER FOR LAKE ERIE AREA RESEARCH
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PREFACE

The following report was prepared by Harold N. Cones, Jr. as partial fulfillment for a Ph.D. degree in the Department of Biological Sciences, Bowling Green State University. Research conducted for this dissertation was part of a project coordinated by the Center for Lake Erie Area Research (CLEAR) at The Ohio State University and was in part sponsored by The Toledo Edison Company (OSURF Project 3752) and The U.S. Fish and Wildlife Service and Ohio Division of Wildlife (Project F-41-R). Dr. William B. Jackson, Department of Biological Sciences, served as advisor. Other members of the reading committee were Drs. T. Richard Fisher, Jane L. Forsyth, Charles E. Herdendorf, Rex L. Lowe, Francis C. Rabalais, and Stephen H. Vessey.

On behalf of the Center for Lake Erie Area Research, I am pleased that we are able to reproduce copies of this research effort and make it available to other scientists.

Charles E. Herdendorf
Director

ABSTRACT

Benthic macroinvertebrate collections for a three-year period from Locust Point, western basin, Lake Erie, in the vicinity of the Davis-Besse Nuclear Power Plant were analyzed. The community proved to be an Oligochaete/Chironomid assemblage with other taxa represented by facultative or pollution-tolerant forms, suggesting the presence of organic pollution at the study site. However, the study area is subject to storm- and wave-induced substrate shifting. The sampled forms may be more indicative of stress of shifting substrate than of stress of pollution. This was partially substantiated by ANOVA and Wilhm's $\overline{d}$ diversity index analysis, which showed extreme variance with no statistical difference between stations, transects, or time. The high variance, a result of shifting substrate and of normal population dynamics, coupled with the natural organic pollution at Locust Point, will make the determination of introduced thermal stress on the population dynamics extremely difficult.

ACKNOWLEDGEMENTS

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Gratitude is also expressed to Mr. Richard Froelich, Mr. Robert Williams, and Mr. Ronald Mollick, Fellow Graduate Students, whose support and ideas have helped form the thought-trains in this dissertation.

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Gratitude is also expressed to Christopher Newport College of The College of William and Mary, which provided two years of academic leave and a financial stipend for the completion of this work. Special thanks

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No amount of thanks will suffice for my wife, Linda, and my daughters, Lanie and Molly, who often wondered where I was. A very special thanks to Linda, who "gave it all up" to live a Graduate Student's life for two years.

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INTRODUCTION

The quality of life and faunal associations of Lake Erie have changed markedly within the last century. In a study of Lake Erie data compiled over a 60-year period, Beeton (1961) found that prior to 1953 the larval population of *Hexagenia*, a mayfly characteristic of clean water, was close to 400/m^2. A decade later, Carr and Hiltunen (1965) reported the population to be less than 1/m^2. They also found that numerous other changes in Lake Erie macrobenthos had occurred between 1930 and 1960: a ninefold increase in Oligochaeta (aquatic annelid worms), a fivefold increase in Chironomidae (midges), a twofold increase in Sphaeriidae (fingernail clams), and a sixfold increase in Gastropoda (aquatic snails). Such changes are indicative of a shift in water quality from "good" to "polluted", according to the criteria of Cairns and Dickson (1971).

The analysis of natural communities, by studying their structure and by considering them as complexes of individuals of different species having definite ecological requirements, is finding increased usage in current literature (Hairston, 1959). Community structures of benthic macroinvertebrate populations frequently have been used as quality indicators in waters receiving high loads of organic matter (MacKenthum, 1969; Goodnight and Whitley, 1961; Howmiller and Beeton, 1971; Olive and Dambach, 1973). Whereas chemical surveys indicate conditions only at the time of sampling, benthic-invertebrate assemblages, because their relative longevity and low mobility necessitate continuous responses, show both present and past environmental conditions in a stream (Farrell,

1930; Surber, 1953; Wilhm and Dorris, 1966). In a classic study, chemical and biological data were shown to vary widely in a multidischarge situation, and it was the biological data that proved to be the better indicator of the true conditions of the stream (Butcher, 1955).

A large variety of benthos usually is indicative of clean water (Lenhard, 1965; Wilhm, 1967; Olive and Dambach, 1973). The assumption is made that "good" water quality provides an optimal environment for the existance of a large number of species. Polluted water, however, imposes one or more limiting factors on the benthic community and therefore restricts the number of species that can survive (Hynes, 1960). Thus, the presence of toxic pollutants may significantly reduce the "natural" diversity of many benthic communities (Olive and Dambach, 1973). Organic enrichment, however, may cause directional, and often dramatic, increases in organic-tolerant life forms, such as Oligochaetes and Chironomids, at the expense of pollution-intolerant forms.

One of the best indicators of organic pollution is the presence of Oligochaetes, particularly the Tubificidae, which possess increased hemoglobin and other physiological adaptations for low-oxygen survival (Wright, 1955). The sixfold increase in this group in three decades found by Carr and Hiltunen (1965) in Lake Erie suggests that, while the lake is certainly "alive", life has changed from pollution-intolerant to pollution-tolerant forms (Resh and Unzicker, 1975).

Changes in the lake in the last several decades also have affected the fish populations. A rise in numbers of fish normally associated with polluted water ("rough fish") and a sharp decline in forms

normally associated with clean water occurred (Van Meter and Trautman, 1970). In like fashion, the aquatic flora also is changing (Beeton, 1961; Stuckey, 1971). These changes are attributed to the rising introduction of sewage and other organic materials from an increased human population in the drainage basin, as well as increased farm runoff (Edwards and Harrold, 1970; Boughey, 1971). These products have accelerated greatly the eutrophication process and the formation of characteristic floral and faunal associations (Powers, et al., 1959; Beeton, 1960; Verduin, 1964; Carr, et al., 1965; Boughey, 1971).

Benthic changes are more dramatic in lotic situations, since a flowing water course naturally cleanses itself downstream from a pollution source. For this reason, most studies involving quantification of organisms into pollution-tolerant categories have been carried out in such habitats. Most notably, Kolkwitz and Marsson (1909) designated three major zones of self-purification in streams and the benthic fauna associated with each; Bartsch and Ingram (1959) and Hynes (1960) have designated organisms in these zones as pollution-tolerant, intolerant, and facultative species.

Designation of species into tolerance categories, however is often difficult and disagreement is frequent in the literature. It is common for pollution-tolerant organisms to be found in normal, clean-water associations (Gaufin and Tarzell, 1956; Cairns and Dickson, 1971); or a given organism may be sensitive to one form of pollution while being tolerant of other forms (Crossman, et al., 1974). Organisms may be absent from a habitat for ecological reasons, such as competitive,

exclusion, rather than from the effects of pollutant introduction (Odum, 1971; Krebs, 1972). In addition, Gaufin and Tarzell (1956) have shown tolerance differences to exist within a single group of organisms, and Gaufin (1958) showed that regional differences occur within species and that environmental conditions other than pollution (e.g., temperature and turbidity) also may impact on the distribution of benthic organisms.

Gaufin and Tarzell (1956) found that associations of benthic invertebrates provided much more reliable criteria of organic enrichment than did the occurrence of single index species. However, the identification of these associations is often cumbersome; it involves complicated life-history studies, species lists, and difficult enumerating techniques.

An alternative method to the problems of tolerance determination is the use of diversity indices. The total number of species (richness) and the distribution of individuals among species (equitability) are used to give a dimensionless index value often used in comparing diversity between areas over time. Such indices have been suggested by Margalef (1956), Hairston (1959), Patton (1962), Wilhm (1967, 1970), Wilhm and Dorris (1968), and Cairns and Dickson (1971). While many of these indices were developed for designated applications, all of them take into account the relative (numerical) importance of each species. Many of the indices are theoretically workable in flowing-water environments; however, for communities of lentic habitats, such as the benthos of Lake Erie, Wilhm's Information Theory $\bar{d}$ (average diversity per individual) is usually considered the most applicable (Wilhm and

Dorris, 1968). This value also may have some promise for indicating recolonization of disturbed habitats in aquatic environments (Olive and Dambach, 1974). However, some recent evaluations of diversity indices suggest that extreme caution is needed in the interpretation of results (Peet, 1974; Cones, 1975). The very concept of mathematical determination of diversity now is being seriously questioned, since many indices appear to be based on false or incomplete initial assumptions (Cones, 1975).

Research applying these principles to large lentic communities such as Lake Erie is rare. The study of the benthos of Lake Erie has been patchy and has often been done as a series of single unrelated studies over vast stretches of lake bottom, with only the presentation of taxonomic lists and little analysis of data. Because of the proximity of the Franz Theodore Stone Laboratory on South Bass Island, the benthos of the immediate island area is well researched (most notably: Krecker and Lancaster, 1933; Shelford and Boesal, 1942; Wood, 1953; Britt, 1966; and Smith, 1966). A few major studies of the entire western basin of the lake have been performed (Brown, 1953; Wright, 1955; Beeton, 1961; Wood, 1963; Carr and Hiltunen, 1965; Hiltunen, 1969). However, no studies are known which have monitored a specific area for an extended period of time.

Announcement of Toledo Edison and Cleveland Electric and Illuminating (CEI) Companies of construction of the Davis-Besse plant, a water-cooled, nuclear-reactor power plant at Locust Point near Port Clinton (western basin, Lake Erie) and the need to assess the environmental impact of the hot-water discharge (Levin, et al., 1970) required

the initiation of a prolonged sampling program in adjacent areas of Lake Erie. Under the direction of CLEAR (Center for Lake Erie Area Research, The Ohio State University), macrobenthos samples have been collected off the plant site monthly (with the exception of the "ice months" of January, February, and March) since June, 1969. (The author collected samples only during the 1974-75 period; those from the 1969-73 period were collected by other CLEAR personnel. Collections by CLEAR continue to the present time.)

The object of the macrobenthic study is to establish a datum plane of current Lake Erie macrobenthos near the plant site which can be compared with data from similar studies conducted after plant start-up and introduction of exhaust waters into the lake area (late 1976-1977). The importance of the study is that, for the first time in the history of benthic research of Lake Erie, the same area will be thoroughly studied and sampled for an 8- to 10-year period. The macrobenthos project is part of an overall CLEAR program which also gathers from the Locust Point area data on: phytoplankton; zooplankton; fish (and fish-stomach contents); and physical and chemical parameters (depth, transparency, dissolved oxygen, carbon dioxide, temperature conductivity, turbidity, alkalinity, pH, sulfate, and ortho-phosphates). (For methodology, see Herdendorf, et al., 1972, 1973, 1974.) The most recent data on these aspects of the study can be found in Herdendorf, et al., 1975.

The portion of the on-going CLEAR study reported on in this paper was designed to enumerate and interpret graphically, statistically, and with diversity indices the 1972-1974 (plant pre-operational) Locust

Point macrobenthos data and to supplement the study program with detailed macrobenthic analysis from April, 1974 through June, 1975. These data from Locust Point were then analyzed to test the following hypotheses: 1) faunal diversity on nondredged bottom areas remains stable; 2) recolonization occurs in dredge-disturbed areas; 3) bottom deposits exert a significant influence on faunal diversity, high clay content decreasing faunal diversity; and 4) temporal changes in community associations of the area are due to factors other than water quality.

THE STUDY AREA

The Lake Erie basin, as well as the entire Great Lakes System, was created by Pleistocene glaciers deepening and broadening ancient stream valleys with the subsequent drastic alteration of drainage patterns. The present Lake Erie consists of three connected basins: the western basin, with an average depth of 10m (30 ft); the central basin, which averages 27m (84 ft) deep; and the eastern basin, averaging 47m (150 ft) in depth (Beeton, 1961; Carr and Hiltunen, 1965). The retreating Wisconsin glacier of approximately 15,000 years BP left much of northwest Ohio including the present lake bottom, covered with ground moraine composed of extremely clay-rich till interspersed with scattered pebbles, silt, and sand (Forsyth, 1966, 1973). In the western basin of the lake, a soft and watery glacio-lacustrine-clay material averaging 1m (3-4 ft) in thickness overlies the till, which averages 3-4m (12-14 ft) thick. This

material has been augmented by runoff sediment and eutrophication products of the lake (Herdendorf, 1972).

Locust Point (83°05'0", 41°35"24") is located on the south shore of western Lake Erie (western basin), approximately 16 km (10 miles) west of Port Clinton, Ohio (Fig. 1). According to Herdendorf (1972), there is sand movement in the lake immediately adjacent to the Point. Sand is transported out of the area by longshore currents and replenished to the beach by wave action carrying sand shoreward from offshore sand and gravel bars (Fig. 2).

Hydrographic surveys (Herdendorf, 1970, 1972) show a very gentle slope of lake bottom from the shore outward for a distance of about 1220m (4000 ft) (Fig. 3). A minor sand bar occurs approximately 37m (120 ft) offshore, and another more extensive sand bar is located 91m (300 ft) from the beach. The exact position and number of these bars vary with storms, varying lake levels, and seasonal changes. The sand bottom, generally composed of medium-to-fine-grained material, extends outward approximately 305m (990 ft), where it thins considerably and overlies a hard glacio-lacustrine-clay in a band 305m (990 ft) wide. Lakeward from this band, the sand thickens, becomes mixed with gravel, and extends out for a distance of 4.8 km (3 miles). The lake is 3m (10 ft) deep at a distance of 640m (2080 ft) from shore; 3.7m (12 ft), at 1220m (4000 ft)(also see Fig. 4).

Dredging for a narrow canal to barge the reactor vessel into the plant site began in fall, 1972 (Fig. 4 and Table 1). The canal was dredged to a depth of approximately 6.7m (22 ft) below low water datum [3.4m (11 ft) below the lake bed], with an average thickness of 3.7m

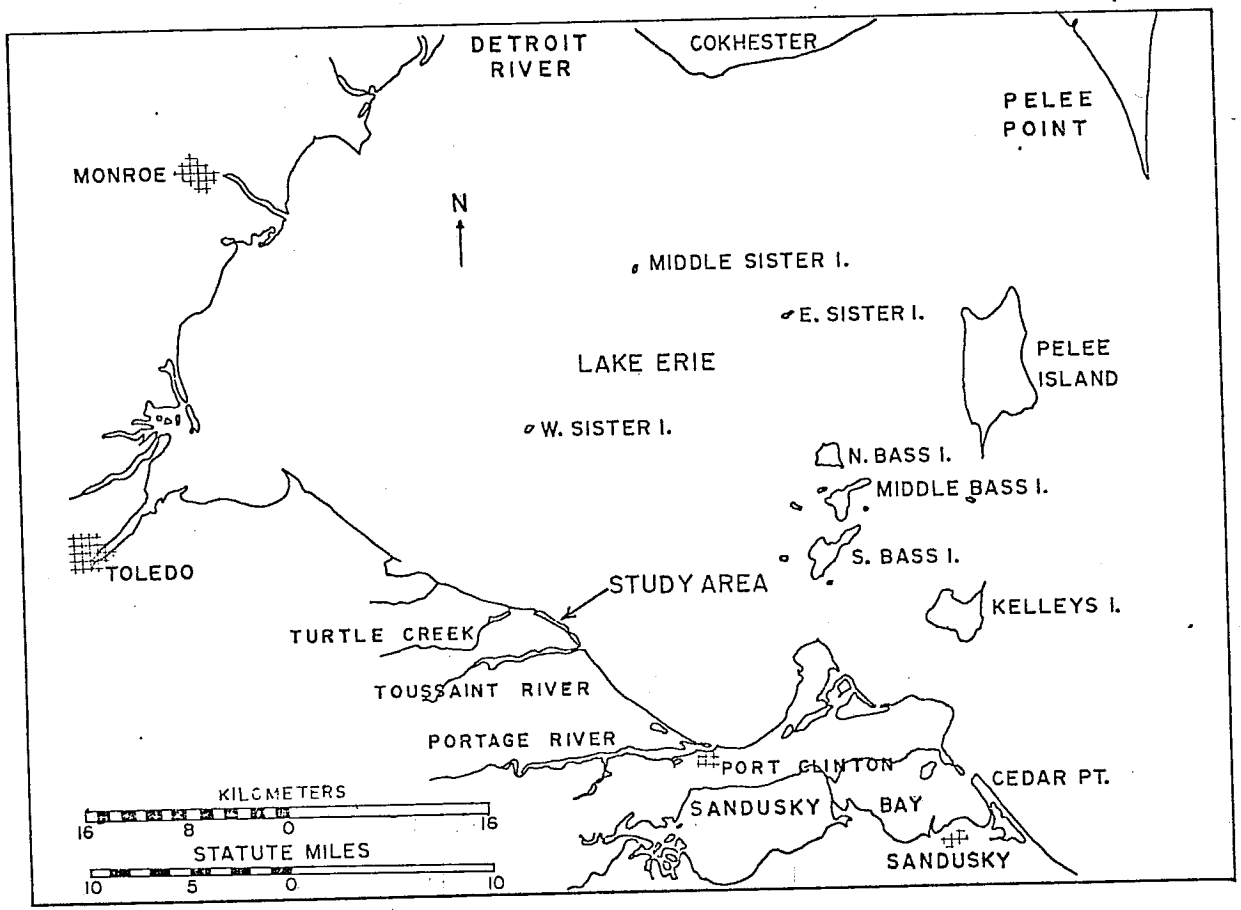


Figure 1. The western basin of Lake Erie showing the study area (redrawn from Herdendorf, 1972).

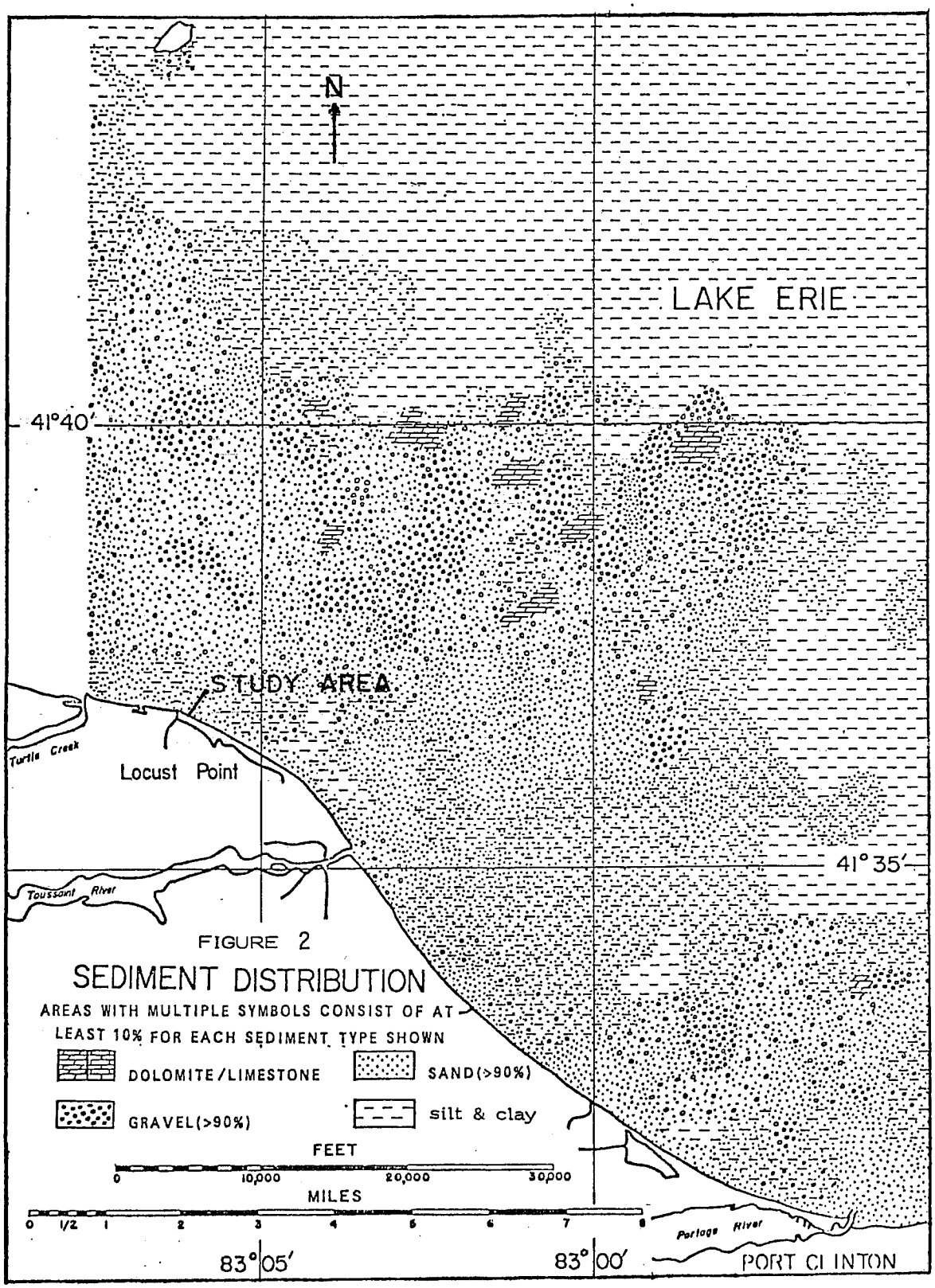

N
LAKE ERIE
41°40′
STUDY AREA
Turtle Creek
Locust Point
41°35′
Toussaint River
SEDIMENT DISTRIBUTION
AREAS WITH MULTIPLE SYMBOLS CONSIST OF AT LEAST 10% FOR EACH SEDIMENT TYPE SHOWN
DOLOMITE/LIMESTONE
SAND(>90%)
GRAVEL(>90%)
silt & clay
FEET
0
10,000
20,000
30,000
MILES
0 1/2 1 2 3 4 5 6 7 8
Portage River
83°05′
83°00′
PORT CLINTON

FIGURE 2

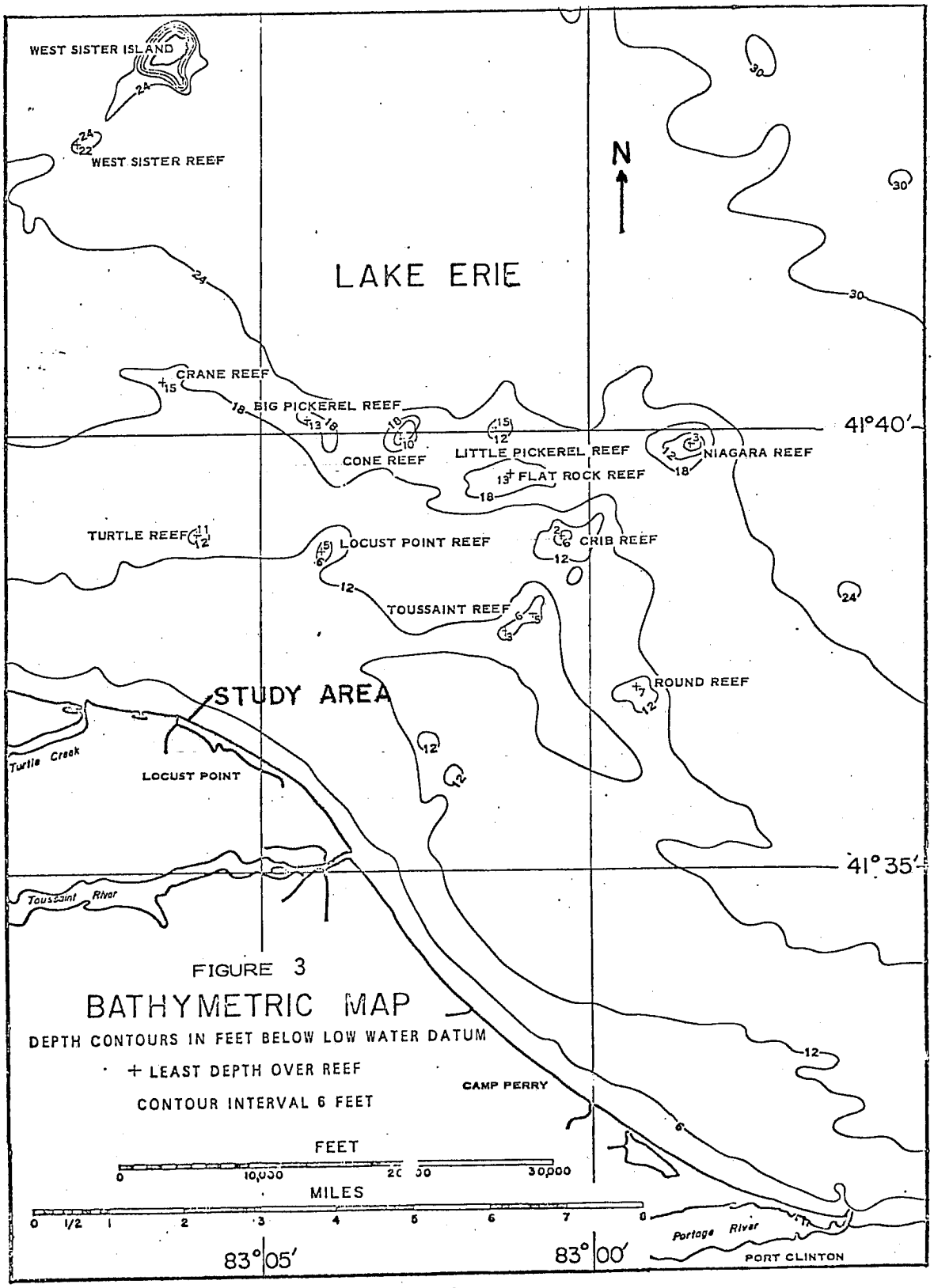


FIGURE 3

BATHYMETRIC MAP

DEPTH CONTOURS IN FEET BELOW LOW WATER DATUM

+ LEAST DEPTH OVER REEF

CONTOUR INTERVAL 6 FEET

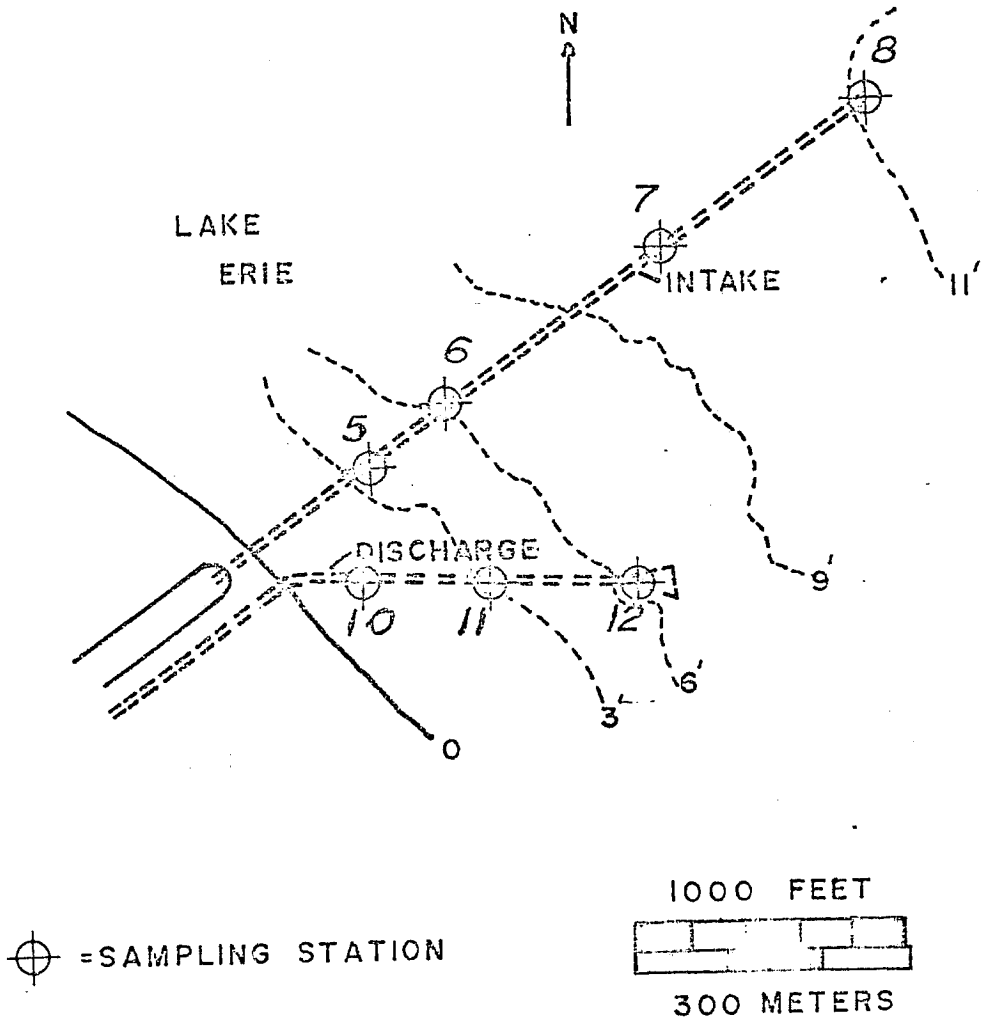


Figure 4. Location of the dredge-disturbed areas at Locust Point (Lake bottom contours below mean low water datum of 868.6 IGLD; numbers in italics are sampling stations)

(12 ft) of material being removed. An intake pipe of 2.4m (8 ft) diameter was placed in the dredged area in spring, 1973. A separate canal into which hot-water effluent would be discharged, was dredged nearby to an average depth of 2.7m (9 ft) in summer, 1973. A 1.8m (6 ft) diameter pipe was sited in this canal in fall, 1973. Backfilling of the canals resulted in loose, till-rich material of varying thickness being placed on top of these lines. Both lines were "smoothed" by dredging in June, 1974. By November, 1974, current-transported sand had begun to cover the fill to a depth of several inches in some places; however, sand and till coverings were disturbed by wave action, and the sand cover was usually not found in the same place in successive samplings. In addition, SCUBA inspection of the dredged lines revealed very uneven bottom contours, with large lumps of clay overlaying shallow depressions. It was these depressions in most cases which first filled with sand (Herdendorf, 1972).

TABLE 1

DREDGING SPECIFICATIONS FOR THE INTAKE AND DISCHARGE LINES AT LOCUST POINT

	Intake		Discharge	
	m	ft	m	ft
A. Average depth of material dug	3.7	12.0	2.7	9.0
1. sand	0.3	1.0	0.3	1.0
2. glacio-lacustrine-clay	1.2	4.0	0.9	3.0
3. glacial till	2.2	7.0	1.5	5.0
B. Pipe diameter	2.4	8.0	1.8	6.0

PROCEDURES

The thermal-effluent plume from the Davis-Besse facility at Locust Point was initially projected to affect a broad area of the lake, necessitating benthic sampling between Turtle Creek and the Toussaint River (Fig. 1) and lakeward for a distance of 4.8km (3 miles). However, the sampling area was reduced to its present size during the 1972-73 sampling season (1972 data) when Toledo Edison-CEI plans were modified to include a cooling tower, thus diminishing both the amount of effluent and area of impact (Table 3).

Sampling Station Locations

Twenty sampling stations were designated, 18 along four transects in the open lake and two in the intake canal (Fig. 5). Of the four transects, two followed the disturbed (dredged) intake and discharge lines; and two were established as controls (relatively undisturbed), one to the east and one to the west of the dredged area (Table 2).

Data collected by CLEAR personnel in the 1969-70, 1970-71, and 1971-72 sampling seasons were found not to be compatible with more recent data, since they were collected over the broader, initially designated area; in no instance did stations correspond. These earlier data are generally useful, however, since they were collected in the same general area. (They were not used in my statistical comparisons.)

During the 1974-75 sampling season (referred to as 1974 data), permanent buoys were used as station markers (placed May, 1974). Previous data had been collected at station sites marked monthly by a

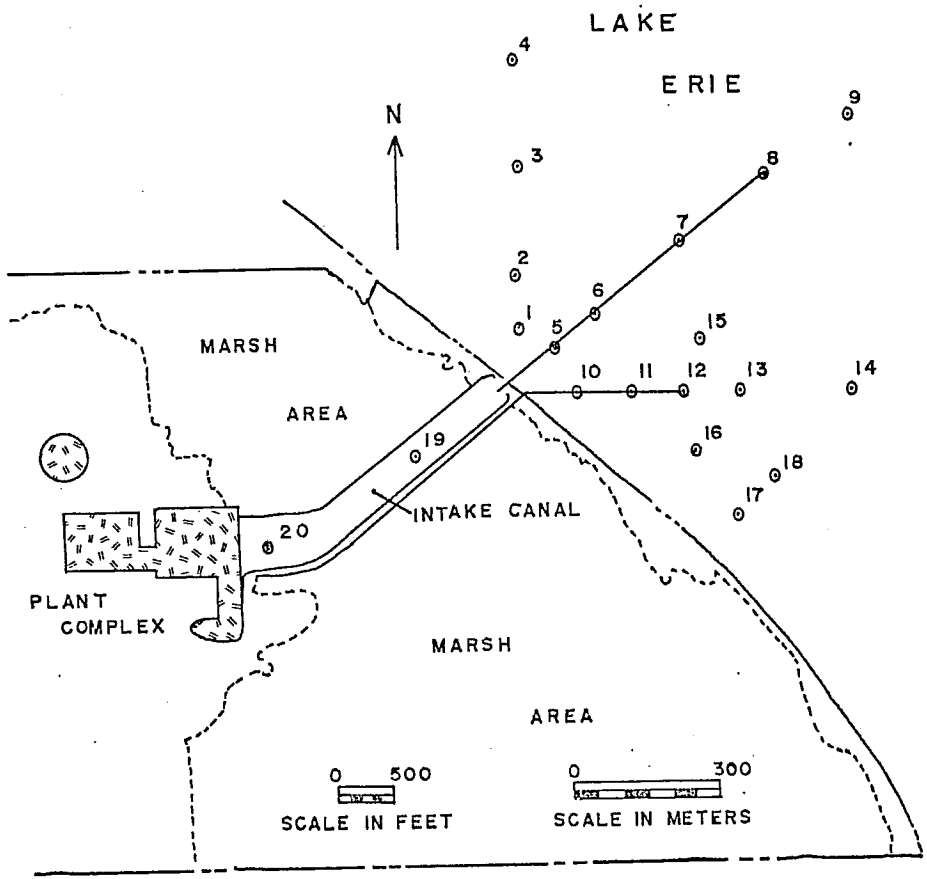


Figure 5. The Locust Point study area showing location of sampling stations. Transect Control West = stations 1-4; Intake = 5-9; Discharge = 10-14; Control East = 17-18. Intake crib located at station 8; discharge crib at station 12.

TABLE 2

CHARACTERISTICS OF BENTHIC SAMPLING STATIONS
AT LOCUST POINT, OHIO, 1973-1974-1975

Transect	Station Number	Distance From Shore		Water Depth		Average Bottom Substrate (See Text)
		m	ft	m	ft	
Control West	1	152.4	500	1.5	4.9	Coarse Sand, Clay
	2	304.8	1000	1.5	4.9	Coarse Sand, Clay
	3	609.6	2000	4.0	13.1	Coarse Sand, Clay
	4	914.2	3000	4.5	13.1	Coarse Sand, Clay
Intake	5	152.4	500	1.0	3.3	Clay Till
	6	304.8	1000	2.0	6.6	Clay Till
	7	609.6	2000	2.0	6.6	Clay Till
	8	914.4	3000	4.0	13.1	Clay Till
	9	1219.2	4000	4.5	14.8	Salt, Coarse Sand, Gravel
Discharge	10	152.4	500	1.0	3.3	Salt, Coarse Sand, Gravel
	11	304.8	1000	1.0	3.3	Salt, Coarse Sand, Gravel
	12	457.2	1500	1.5	4.9	Salt, Coarse Sand, Gravel
	13	609.6	2000	2.5	8.2	Coarse Sand
	14	914.4	3000	4.0	13.3	Fine Sand, Detritus
	15	457.2	1500	1.5	4.9	Coarse Sand, Gravel
	16	457.2	1500	1.5	4.9	Coarse Sand, Gravel
Control East	17	152.4	500	1.0	3.3	Coarse Sand, Fine Sand
	18	304.8	1000	1.5	4.9	Coarse Sand
Intake Canal	19	-304.8	-1000	4.5	14.8	Silt
	20*	-762.0	-2500	4.5	14.8	Silt

* abandoned May, 1974 for construction

measured line (tag-line) run from permanent shore markers. The tag-line stations and permanent buoy stations were considered to be the same, since the permanent buoys were initially set by the same tag-line procedure.

Biological Sampling

Samples of benthic macroinvertebrates were taken monthly at each station using an Ekman grab (Area = 0.05 m^2) during the 1967-72 sampling periods; a much heavier Ponar grab (Area - 0.55 m^2) was used for the 1973-75 data in an effort to obtain a better sample on hard substrates. Single samples were taken from each station prior to the 1974-75 sampling season, when a triplicate sample program was initiated in an effort to determine variability in community composition at each station with greater precision.

Samples were collected at stations 1-18 using a 16-ft outboard motor boat having a hand-operated winch; at stations 19 and 20, using a small rowboat. Substrate type was subjectively determined and rated as follows: detritus, silt, soft mud, hard mud, clay till, fine sand, coarse sand, sand/gravel, or large gravel. Material taken by the grab was rough sieved at the collecting site through a U.S. #40 wire sieve, placed in 10 percent formalin, and returned to the laboratory. Each sample was then thoroughly washed in running water (U.S. #40 wire sieve) to break down clay lumps, stained with Rose Bengal, and sorted in white enamel pans. Individuals were identified to genus in most cases and to species level where possible. Immature Oligochaetes, identified as immature by absence of abdominal swelling, were combined and counted,

while mature Oligochaetes were identified to species level in most cases (Fig. 6). Keys used for benthos identification included Turner (1926); Miller (1929); Pennak (1953); Ward and Whipple (1959); Stein (1962); Brinkhurst (1964, 1965, 1966); Brinkhurst, Hamilton and Harrington (1968); Hiltunen (1973); and Mason (1973). Benthos verification, when needed, was provided by Dr. Elizabeth Hair of CLEAR. A reference collection was established and filed at Bowling Green State University. Raw data were published in semi-annual and annual project reports (Herdendorf, et al., 1972, 1973, 1974, and 1975) and are presented in Appendices I-III of this document.

RESULTS

All taxa collected and the number of each per square meter are listed in Appendices I-III, Tables 3-8, and Figure 7. Synopsized water-quality data, taken from Herdendorf, et al. (1975), are presented in Appendix IV. Values ($\overline{d}$) generated by Wilhm's diversity index are found in Tables 9-10.

General Trends of the Macrobenthos Data from Locust Point

A total of 36 taxa was found at Locust Point during the 3-year study period. These were dominated by 14 species of Oligochaetes and eight species of Chironomids. By number, immature Oligochaetes (without hair setae) dominated the community. Deposit feeders were numerous, while filter feeders were sparse throughout the study area (Table 3).

The dominant association in the study area was a combination of

Figure 6. Flow diagram showing procedures for handling samples.

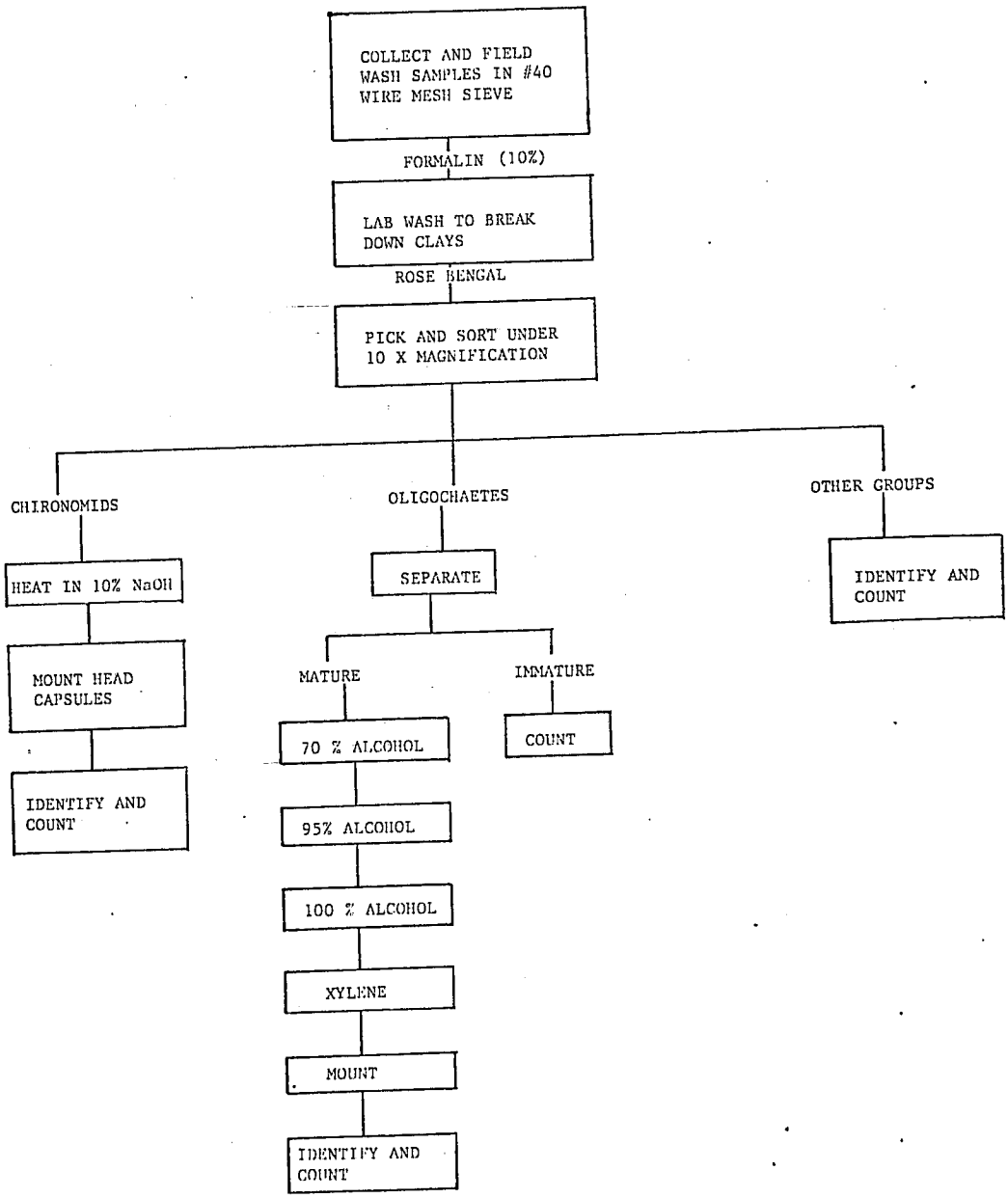


TABLE 3

MEAN FREQUENCY OF OCCURRENCE (%) IN BENTHIC MACROINVERTEBRATE SAMPLES AT LOCUST POINT, OHIO, 1972, 1973, 1974

Organism	1972	1973	1974 3 Grab Mean	1974 1st Grab Only
Coelenterata				
Hydra sp.	11.6	13.1	12.4	17.6
Hirundinae				
Glossiphonidae	6.9	0.7	0.0	0.0
Erpobdellidae	1.1	0.7	2.8	3.9
Oligochaeta				
Limnodrilus cervix	5.8	23.8	17.0	18.9
L. claparedeanus/cervix	0.0	0.0	7.8	9.8
L. hoffmeisteri	8.1	21.5	1.7	2.0
L. udekemianus	0.0	0.0	4.1	5.2
L. claparedeanus	3.4	13.8	20.5	20.9
L. maumeensis	0.0	0.0	2.0	1.3
Potamothrix vejdorskyi	3.4	10.0	1.1	0.7
P. moldaviensis	15.1	35.4	21.1	20.9
Branchiura sowerbyi	15.1	19.2	21.4	23.4
Nadium sp.	10.4	0.0	0.0	0.0
Pristina sp.	3.4	0.0	0.0	0.0
Uncinais uncinata	4.6	1.5	0.0	0.0
Stylaria sp.	0.0	0.0	1.5	2.6
Naididae	1.1	0.0	0.0	0.0
Immature (no hair setae)	51.1	79.2	88.7	89.5
Immature (hair setae)	0.0	0.0	3.9	4.6
Amphipoda				
Gammarus fasciatus	24.4	13.1	17.4	17.6
Hyalella azteca	0.0	0.0	0.2	0.0
Ephemeroptera				
Caenis sp.	4.6	2.3	3.1	2.6
Decapoda				
Orconectes sp.	0.0	0.0	0.2	0.0
Trichoptera				
Limnephilidae	1.1	0.0	0.0	0.0
Chironomidae				
Chironomus (Chironomus) sp.	19.7	44.6	53.4	56.2
C. (Cryptochironomus) sp.	26.7	28.5	20.7	22.9
Polypedilum sp.	15.1	12.3	1.3	0.7
Pseudochironomus sp.	3.4	2.3	1.3	0.0
Tanytarsus sp.	15.1	33.8	39.4	37.9
Procladius sp.	6.9	23.8	34.9	28.1
Coelotanypus sp.	3.4	9.2	7.0	9.1
Cricotopus sp.	1.1	0.0	0.4	0.7
Gastropoda				
Bulimus sp.	0.0	0.0	0.4	0.7
Pelecypoda				
Amblema plicata	1.1	0.0	0.6	0.7
Ligumia recta	2.3	0.0	0.0	0.0
Leptodea fragilis	1.1	0.7	0.0	0.0
Pisidium sp.	26.8	0.7	0.0	0.0
Sphaerium sp.	0.0	6.9	5.7	6.5
Total Number of Samples	86	123	459	153

TABLE 4

NUMBERS OF MACROINVERTEBRATES PER SQUARE METER AT EACH STATION FOR EACH SAMPLING PERIOD-1972

Station	July 10-11	August 1	September 1	October 6	November 6
1	0	0	NS	NS	NS
2	18	0*	NS	NS	NS
3	36	18	NS	NS	NS
4	2009	489	NS	NS	NS
5	18	18	54	54	290
6	72	0*	NS	344	72
7	1376	0*	NS	3330	1104
8	815	181	NS	3982	615
9	2299	869	NS	3892	NS
10	0	0*	NS	199	NS
11	1032	72	NS	0	NS
12	1140	54	NS	1267	NS
13	2552	149	NS	597	NS
14	3439	0*	NS	2570	NS
15	579	634	NS	NS	NS
16	688	NS	NS	NS	NS
17	NS	NS	NS	NS	NS
18	NS	NS	NS	NS	NS
19	NS	NS	NS	NS	NS
20	NS	NS	NS	NS	NS

* Sample Error (sample not preserved)
NS = Not Sampled due to adverse weather

TABLE 5

NUMBERS OF MACROINVERTEBRATES PER SQUARE METER
AT EACH STATION FOR EACH SAMPLING PERIOD-1973

Station	May 27	June 2	July 1-2	Aug 23	Sept 19-26	Oct	Nov 2-7	Dec 4
1	0	217	36	NS	253	NS	971	163
2	18	0	0	253	325	NS	307	289
3	886	4181	1447	NS	2206	NS	2552	2660
4	NS	1646	1519	2643	2534	NS	23100	2444
5	0	18	0	91	36	NS	0	452
6	434	0	36	18	163	NS	126	0
7	4435	1212	8000	NS	109	NS	597	941
8	1484	1592	597	18	3095	NS	1786	325
9	1321	832	923	1180	2317	NS	23602	2606
10	362	0	0	253	217	NS	181	1682
11	126	18	36	289	54	NS	326	4489
12	100	651	580	0	27	NS	1176	3674
13	344	761	181	507	2897	NS	1285	2497
14	361	633	777	NS	760	NS	3221	1520
15	144	651	199	NS	4833	NS	3293	4344
16	90	109	36	72	815	NS	434	362
17	NS	NS	182	0	905	NS	669	0
18	652	525	887	0	3421	NS	3059	6861
19	NS	NS	1	0	198	NS	507	271
20	NS	NS	NS	0	0	NS	18	181

NS = Not Sampled due to adverse weather

TABLE 6

TOTAL MACROBENTHOS POPULATION PER SQUARE METER-THREE GRAB MEAN-1974

Station	April 17-18	May 22-23	June 19-20	July 17	August 14	September 6	October 10	November 7
1	19	44	1700	127	592	83	579	210
2	96	516	147	76	102	274	528	210
3	1541	1662	4170	3185	2776	1191	2903	3247
4	3228	2375	2693	1910	2782	1738	3737	1745
5	312	140	115	127	127	115	1904	32
6	166	2941	191	204	7659	478	1413	548
7	3763	2413	433	267	624	834	471	255
8	3361	255	1585	458	535	1394	1445	751
9	898	1414	936	1770	1343	4564	1643	2095
10	57	57	191	51	185	127	185	38
11	382	382	3361	471	3152	439	102	586
12	1178	2808	802	458	102	643	560	1159
13	1293	465	337	987	89	1827	337	1490
14	5857	3998	3769	3018	3890	5004	3444	4291
15	357	89	1452	1464	1388	840	1700	745
16	401	134	1101	1292	1127	1821	802	255
17	57	3082	2840	337	102	210	331	83
18	3635	204	3056	1770	2184	7175	840	1108
19	325	618	146	153	261	567	38	0
20	178	*	*	*	*	*	*	*

* This station had been drained of all water for further construction.

TABLE 7

TOTAL MACROBENTHOS POPULATION PER SQUARE METER-FIRST GRAB ONLY-1974

Station	April 17-18	May 22-23	June 19-20	July 17	August 14	September 6	October 10	November 7
1	19	76	267	190	115	38	707	439
2	152	229	96	58	134	229	38	401
3	1929	1929	6284	3209	2407	1337	2674	6876
4	4469	1566	4813	2464	4298	3476	4832	2750
5	267	38	134	76	57	38	1528	19
6	96	2368	96	248	1815	917	2311	401
7	860	2216	516	38	592	1490	707	420
8	3113	325	1146	0	1146	1757	993	1051
9	1165	2025	1318	1872	1929	2865	649	783
10	96	38	38	76	134	190	344	57
11	210	516	840	96	879	611	134	1585
12	57	2368	1203	1031	96	172	1184	458
13	2636	1031	153	688	210	2120	344	325
14	4412	4603	5405	3858	6284	5845	4355	6017
15	630	115	3266	3381	1261	497	2846	516
16	363	190	1203	1834	1356	1624	611	401
17	57	4431	3954	669	96	210	420	153
18	5214	248	4412	1012	2120	6628	1127	420
19	38	688	210	153	325	497	19	0
20	38	*	*	*	*	*	*	*

* This station had been drained of all water for further construction.

TABLE 8

SAPROBIC CLASSIFICATION OF LOCUST POINT MACROINVERTEBRATE GENERA ACCORDING TO WEBER (1973). T = POLLUTION TOLERANT, F = FACULATIVE, I = POLLUTION INTOLERANT

T	T/F	T/F/I	F/I	I
Limnodrilis	*Hyallela*	*Orconectes*	*Tanytarsus*	*Pseudochironomus*
Helobdella (Erpobdellidae)	*Procladius*	*Sphaerium*		
		Coelotanypus		
		Chironomus		
		Cryptochironomus		
		Polypedilum		
		Caenis		
		Sphaerium		

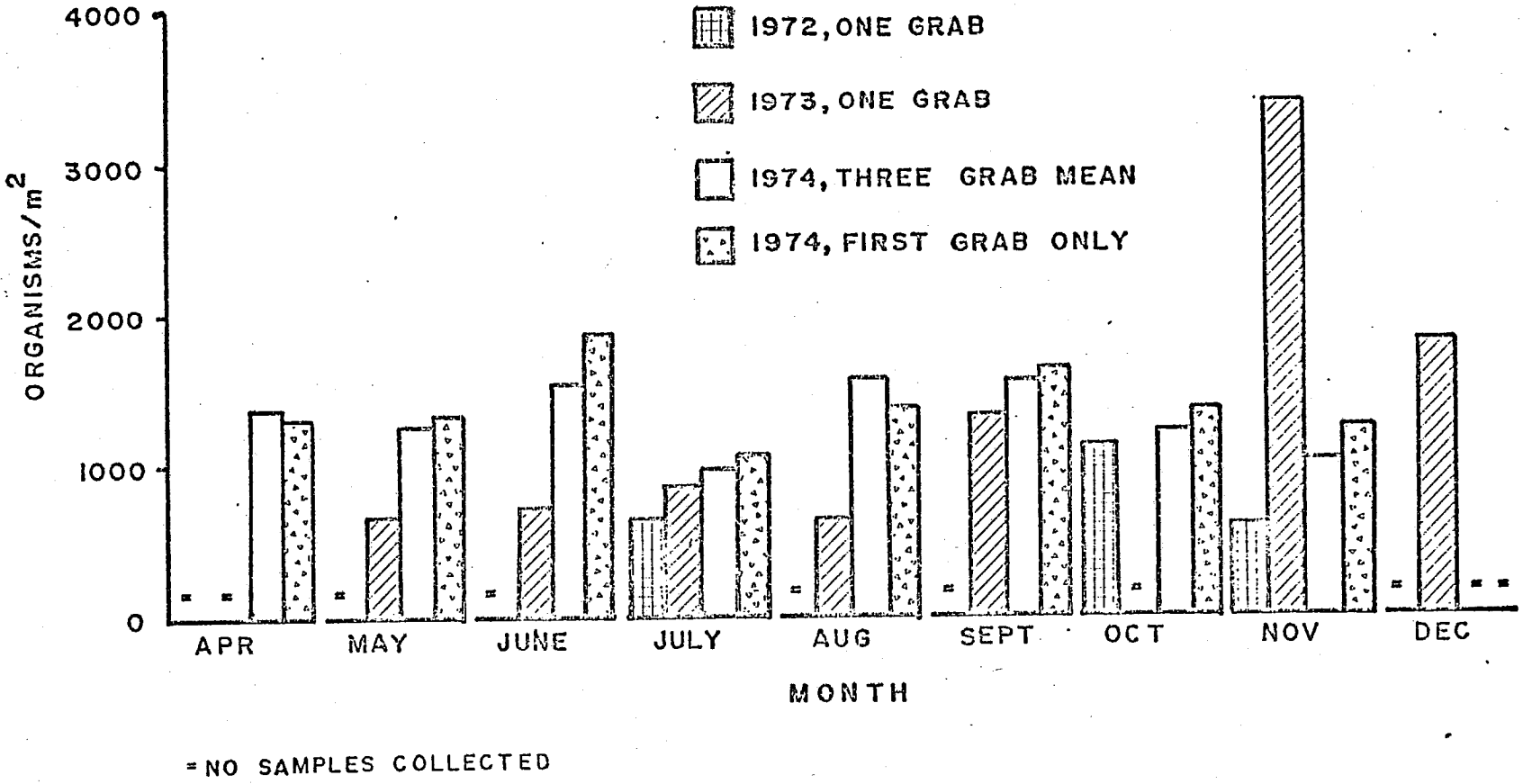


Figure 7. Mean monthly macroinvertebrate populations, based on grab samples, for Lake Erie at Locust Point, 1972, 1973, 1974. Total number of samples for 1972 = 86; 1973 = 123; 1974, three grab mean = 459, first grab only = 153.

TABLE 9

DIVERSITY INDEX VALUES AT THE GENUS/SPECIES LEVEL USING WILHM'S $\bar{d}$ CALCULATION
(1974 DATA EXPRESSED AS MEAN OF 3 GRABS/STATION)

STATION	July '72	Aug '72	Oct '72	Nov '72	Mar '73	June '73	July '73	Aug '73	Sept '73	Nov '73	Dec '73	Apr '74	May '74	June '74	July '74	Aug '74	Sept '74	Oct '74	Nov '74
1	0	0	NS	NS	0	2.22	0	NS	2.25	2.26	0	0	1.50	2.10	0.37	2.47	1.30	0.24	1.29
2	0	NS	NS	NS	0	0	0	1.66	0.99	0.42	0	2.00	1.67	1.77	0.59	0.35	1.65	0.70	1.42
3	0	0	NS	NS	2.53	1.83	2.07	NS	2.79	1.84	0.70	1.28	3.46	1.35	2.17	2.90	1.20	1.81	2.96
4	1.75	2.41	NS	NS	NS	1.60	2.66	1.18	1.44	0	2.55	1.50	3.23	1.70	2.95	2.85	2.44	1.77	2.36
5	0	0	NS	1.22	0	0	0	1.37	0	0	2.06	0	0.92	0.54	1.00	1.78	1.57	2.71	0.81
6	0.81	NS	1.83	1.59	1.63	NS	1.00	0	1.50	0	0	1.48	2.79	0.61	2.57	2.62	1.20	2.48	2.53
7	1.66	NS	2.23	1.79	2.48	1.82	0.69	NS	0	0.97	0	1.77	2.24	1.35	1.22	2.53	2.42	2.61	1.99
8	0.97	0	1.48	1.59	3.02	1.98	1.25	0	1.52	2.08	1.50	1.36	1.62	2.11	1.84	2.40	2.08	2.30	2.09
9	2.36	2.00	1.76	NS	2.48	1.24	0.56	1.43	1.80	0.21	0.74	1.35	1.66	1.84	0.59	2.48	1.48	2.57	2.33
10	0	NS	1.16	NS	1.00	0	NS	0.81	1.00	0.59	0.99	0	0.81	1.32	0	2.04	2.10	2.42	0
11	0	NS	0	NS	1.00	0	0	1.42	1.59	1.78	2.16	0.52	0	1.13	2.07	1.80	1.24	2.00	2.58
12	1.42	NS	2.52	NS	0	0.85	1.47	NS	0	2.14	2.70	0.77	2.79	1.01	1.53	0.49	2.52	2.46	1.85
13	2.66	1.00	2.15	NS	2.05	0	0	0.47	2.18	1.00	0.45	0.92	0.92	2.32	0.99	1.66	1.43	2.32	2.58
14	2.82	NS	2.15	NS	1.75	0.81	2.48	NS	0.92	2.32	1.14	1.63	2.51	1.45	2.24	2.75	2.26	2.53	2.13
15	1.00	0.92	NS	NS	0.92	1.92	0.72	NS	2.73	2.26	1.50	0	0.72	1.21	2.13	2.61	0.99	2.55	2.47
16	1.50	NS	NS	NS	0	0	0	1.00	0.65	0	0	1.59	1.37	1.04	1.71	1.87	2.36	1.61	0.92
17	NS	NS	NS	NS	NS	NS	0.72	NS	1.48	1.59	0	1.00	2.87	0.85	1.46	1.82	1.56	1.46	1.00
18	NS	NS	NS	NS	1.74	1.30	1.89	NS	2.78	2.43	2.61	1.75	0.99	1.62	0.96	1.00	2.51	2.12	2.11
19	NS	NS	NS	NS	NS	NS	NS	NS	2.24	0	0	1.46	1.58	1.47	0.43	1.80	1.05	0	0
20	NS	NS	NS	NS	NS	NS	NS	ns	0	0	0	1.22	NS	NS	NS	NS	NS	NS	NS

NS = Not Sampled
0 = Value < 0.20

Control West = stations 1-4
Intake = stations 5-9

Discharge = stations 10-14
Control East = stations 17-18
Forebay = stations 19-20

TABLE 10

DIVERSITY INDEX VALUES AT THE FAMILY LEVEL USING WILHM'S $\bar{d}$ CALCULATION (1974 DATA EXPRESSED AS MEAN OF 3 GRABS/STATION)

STATION	July '72	Aug '72	Oct '72	Nov '72	Mar '73	June '73	July '73	Aug '73	Sept '73	Nov '73	Dec '73	Apr '74	May '74	June '74	July '74	Aug '74	Sept '74	Oct '74	Nov '74
1	0	0	NS	NS	0	1.28	1.00	NS	1.26	0.36	0.76	0.92	1.45	1.78	1.34	0.34	0.96	0.85	1.40
2	0	NS	NS	NS	0	0	0	0.94	0.96	0.83	0.70	1.24	0.70	1.56	1.33	0.67	1.61	1.25	1.58
3	1.00	0	NS	NS	1.52	0.22	0.47	NS	0.68	0.29	0.67	0.28	0.39	1.38	0.61	0.68	1.53	0.95	0.25
4	0.23	0.70	NS	NS	NS	0	0.55	0.93	0.47	0.65	0.35	0.48	0.40	1.58	0.72	0.62	1.05	1.08	0.66
5	0	0	NS	1.68	0	0	0	1.37	0	0	1.12	0	0.57	0.76	0.57	1.60	1.46	0.38	0.72
6	0.81	NS	1.47	1.50	0.74	NS	1.00	0	0.92	0.99	0	0.71	0	1.34	1.97	0.72	1.10	0.59	1.60
7	0.49	NS	0.57	0.52	0.70	0.74	0.99	NS	0.65	0.44	0.96	0.84	0.79	1.24	1.23	1.77	1.29	1.23	1.32
8	0.50	0.47	1.28	0.57	0.68	0.73	0.80	0	0.19	0.74	0.31	0.32	1.08	1.44	2.12	1.50	1.53	0.84	1.47
9	1.83	0	0	NS	1.13	0.56	0.98	0.91	0.16	0.45	0.67	0.31	0	1.30	1.15	0.89	1.49	1.66	0.24
10	NS	NS	1.10	NS	0.57	0	NS	0.86	0.41	1.30	0.47	0.76	0.99	0.47	0.54	1.49	1.52	1.21	0.65
11	0	NS	0	NS	0.99	0	0	1.01	1.59	1.38	0.73	1.28	0	0.88	1.23	0.79	0.26	0.67	0.50
12	0.32	NS	1.22	NS	0.44	0	0.76	NS	0	0.30	0.50	0	0	1.09	1.01	1.58	1.15	2.01	1.41
13	0.47	0.42	1.30	NS	1.68	0.83	0	0.91	0.29	0.21	0.15	0	0.49	1.58	0.80	2.01	1.44	1.34	0.25
14	0.30	NS	0.94	NS	1.08	0.42	0.37	NS	0	0.56	0.76	0.52	0.34	1.03	0.79	0.68	0.81	0.76	1.09
15	0.30	0.50	NS	NS	1.30	0.85	0.44	NS	0.36	0.72	0	0.35	1.26	1.18	1.25	1.04	1.52	0.25	0.85
16	0.40	NS	NS	NS	0	0	0	0.81	0.15	0	0	0	0.86	1.17	1.17	1.03	0.42	0.40	0.20
17	NS	NS	NS	NS	NS	NS	0.15	NS	0.72	0	0	0.50	0	0.69	1.57	0.99	1.04	0.32	0.62
18	NS	NS	NS	NS	0.92	0.80	0.47	NS	0.28	0.66	0.49	0	0.70	0.91	0.83	1.02	0	0.29	0.60
19	NS	NS	NS	NS	NS	NS	NS	NS	0.59	0	0	0.32	0.65	1.41	0.66	0.99	0.95	0	0
20	NS	NS	NS	NS	NS	NS	NS	NS	0	0	0	0.86	NS	NS	NS	NS	NS	NS	NS

NS = Not Sampled
0 = Value < 0.20

Control West = stations 1-4
Intake = stations 5-9

Discharge = stations 10-14
Control East = stations 17-18
Forebay = stations 19-20

Limnodrilus and *Chironomus*, which broadly fits into Weber's (1973) Tolerant or Tolerant/Facultative categories. Organisms collected which fit into the Saprobic classification system as proposed by Weber are synopsized in Table 8.

In all sampled years, macrobenthos numbers were low in the early months of the sampling season, and a gradual increase in numbers occurred through the summer and into the fall. The depression in Chironomids which occurred in the summer was offset by an increase in immature Oligochaetes.

Generally, faunal diversity remained unchanged on the nondredged portions of the study area over the 1972-74 study period, but great fluctuations in numbers of individuals occurred. On the dredge-disturbed areas during the same period increasing numbers of organisms were found; recolonization was slow but continuing (Tables 3-7).

Bottom deposits varied monthly at each station throughout the area; however, organisms were found in all deposits except in fine sand. The greatest species diversity was found in detritus/silt deposits followed by soft clay, hard clay, and finally sand/gravel.

Biological data and chemical data from other CLEAR studies suggest that Lake Erie in the vicinity of Locust Point exhibits moderate organic pollution. This condition places a stress on the macrobenthic community in the study area. In addition, the community is stressed by wave-disturbed bottom deposits and deposit-shift due to longshore currents.

Specific Organism Trends

Chironomids

Chironomid numbers were generally high in the early months of sampling (Appendices I-III). In mid-summer, Chironomid numbers generally dropped, presumably due to emergence (Barnes, 1968). In November, 1973, the unusually high numbers of *Tanytarsus* sp. collected, coupled with a high incidence of *Hydra* sp., accounted for the high number of benthos (and apparent distortion of the trend) in that month (Fig. 7).

Dominant Chironomids found in the study area were *Chironomus* sp., *Tanytarsus* sp., and *Procladius* sp. (Table 3). Of these three, only *Tanytarsus* assumed a definite seasonal distributional pattern, occurring chiefly in mid-to-late summer in all years (Appendices I-III).

Oligochaetes

Oligochaete numbers were highly variable in all years, exhibiting no marked trends (Table 3). Since Oligochaetes as a group are so intimately associated with bottom deposits, the variability of these deposits probably accounts for such variations. High variation also negates attempted associations of numbers to known life cycles of the group.

Dominant Oligochaetes in the study area were *Branchiura sowerbyi*, *Limnodrilus cervix*, *L. claparedeanus*, and *Potamothrix moldavienis* (Table 3). *Potamothrix* occurred chiefly at the shallow-water, inshore stations (1, 2, 5, 6, 10, and 11). The dominant Oligochaete fauna in the plant forebay was *L. claparedeanus*; they were larger than in the lake proper.

Other Groups

The only trend exhibited by any other group was shown by the Arthropod *Gammarus* which was found chiefly at offshore, detritus-rich stations (principally 14) and the detritus-rich forebay area.

Statistical Evaluations

Only 1973 and 1974 data were used for statistical comparisons because data from previous years were incomplete and in many cases from different stations. Analysis of variance for the Locust Point benthic invertebrate population (Tables 11-13) showed extremely high variability, which masked any variance of the means. Since no significant difference could be demonstrated between years or between transects, the two control transects were combined (Tables 11-12). No significant differences were found in benthos/m^2 between the intake, discharge, or control transects for either year.

A representative sample (four stations) randomly chosen from 1974 data showed three instances where no significant difference occurred between the mean benthos/m^2 of the first grab and the mean of the other two [$t_{.05}$(14d.f.) = 0.094, 1.07, 1.634] and one instance where a significant difference was found ($t_{.05}$ = 3.076). In all cases, variances were extremely high [Coefficients of variation (CV) yielded such values as 24,999 per cent and 31,966 per cent.] [Coefficient of variation was determined by the formula: $CV = S^2/\overline{x} \cdot 100$.]

TABLE 11

ANALYSIS OF VARIANCE BASED ON MEAN OF THREE GRABS COMPARING CONTROL TRANSECTS WITHIN AND BETWEEN SAMPLE YEARS WHERE DATA ARE EXPRESSED AS MEAN BENTHOS/M^2/MONTH

	SS	DF	MS	F
Year (1973/1974)	385320	1	385320	0.184
CW/CE	492207	1	492207	0.235
Interaction	3234738	1	3234738	1.543
Error	41917311	20	2095866	

Note: CW = Control transect west
CE = Control transect east

TABLE 12

ANALYSIS OF VARIANCE BASED ON FIRST GRAB ONLY COMPARING CONTROL TRANSECTS WITHIN AND BETWEEN SAMPLE YEARS ARE EXPRESSED AS BENTHOS/M^2/MONTH

	SS	DF	MS	F
Year (1973/1974)	1851482	1	851482	0.765
CW/CE	984150	1	984150	0.408
Interaction	2274273	1	2274273	0.940
Error	48386452	20	48386452	

Note: CW = Control transect west
CE = Control transect east

TABLE 13

ANALYSIS OF VARIANCE BASED ON FIRST GRAB COMPARING TRANSECTS WITHIN AND BETWEEN SAMPLE YEARS WHERE DATA ARE EXPRESSED AS BENTHOS/M^2/MONTH

	SS	DF	MS	F
Year (1973/1974)	127445	1	127445	0.127
I, O, C	2084967	2	1042484	1.038
Interaction	3917696	2	1958848	1.950
Error	39173017	39	1004436	

Note: I = Intake transect

D = Discharge transect

C = Control transect

DISCUSSION

The primary objective of the present study was to establish a data plane of current macrobenthic populations at Locust Point, Ohio. These data may then be used for comparative purposes to determine the effects of the introduction of thermal effluent from the Davis-Besse plant on community dynamics in that portion of Lake Erie. In order for direct comparisons to be made, however, either now, or in the future, it is necessary to assume homogeneity among sampling areas, since homogeneous areas will support comparable populations (Odum, 1971). This assumption cannot be made at Locust Point; physical factors, such as depth, bottom deposits, and temperature, are variable between sampling stations. These factors differentially affect community structure (Saunders, 1958, 1969; Peet, 1974), so that it will be difficult to determine if change in species composition at any station is the result of thermal effluent or of some other variable.

The Role of Substrates

One of the major contributors to nonhomogeneity at the Davis-Besse study area is the highly variable bottom deposits. Dredging and redreging of the intake and outfall lines have exposed vast areas of clayey till on the otherwise sand-and-gravel bottom. Since in order for direct comparisons to be made between stations, deposits being compared must be the same, it becomes obvious that changes in a community sampled in sand cannot be compared with changes in a community sampled in till material, gravel, or clay. Superimposed on this inherent variability is vari-

ability attributed to storm activity and movement of sand into and out of the Locust Point area. Although the dredged transects began to develop a thin sand layer during the latter part of the study, direct comparisons with less disturbed stations are still not valid because of the difference of the underlying material.

It has long been known that the nature of the bottom deposits has a definite effect on macrobenthic populations of Lake Erie. Krecker and Lancaster (1933), working in the western basin, found sand to have the sparsest populations (100 individuals/yd^2), followed by pebbles, hard clay, flat rubble, angular rubble, and finally shelving rock, which had a population of 7,700 individuals/yd^2. They attributed the increase in life forms as one passes from sand to shelving rock to a corresponding increase in stability of substrate, shelving rock representing maximum stability.

These relationships have been examined much more extensively in marine habitats. Saunders (1958), working in Buzzards Bay, Massachusetts, found a distributional relationship between clay content of the bottom and in faunal distribution. Areas rich in clay were high in deposit feeders, while sand-rich areas were high in filter feeders. He concluded that clay content is probably the most valid correlate for the distribution of deposit feeders, since the smaller size of clay particles results in their having a larger surface area for the bonding of organic matter, the source of food for deposit feeders.

Later, Saunders (1969) introduced the stability-time hypothesis, relating stress factors to benthos diversity. He found areas subject

to stress, such as sharp temperature gradients, or shifting bottom deposits, had a less diverse fauna than did similar, but non-stressed areas. Then in 1970, Rhoads and Young, also working in Buzzards Bay, found that the biological activities of the infauna served to limit faunal distribution. The intensive reworking of the benthic surface by deposit feeders produced a fluid, fecal-rich and clay-rich accumulation of material on the sediment surface, easily stirred by currents, which could: 1) readily clog the filtering structures of suspension feeders, 2) bury newly settled larvae or discourage the settling of suspension-feeding larvae, and 3) prevent sessile epifauna from attaching to the bottom. They concluded that suspension (filter) feeders are unable to populate successfully all areas of the bottom, particularly areas high in deposit feeders. Such stress produced what was called trophic-group amensalism. Finally, Dayton (1971) applied the principles of Saunders (1958, 1969) and Rhoads and Young (1970) to a rocky marine system and concluded that the growth and regulation of the component populations in the community are affected in a predictable manner by natural physical disturbances and by interactions with other species in the community.

Generally, Locust Point data support these theories. Filter feeders were sparse over the study area, but deposit feeders occurred in high numbers, often reaching 1400/m^2 or more. The primary filter feeder (the fingernail clam, *Sphaerium* sp.) and the secondary filter feeder (a clam, *Amblema* sp.) (Table 3) occurred chiefly in sandy areas somewhat diminished in deposit feeders.

However, diversity at the Davis-Besse study site was highest in detrital/silt deposits and lowest in sand, thus appearing to be in partial conflict with previous workers (Krecker and Lancaster, 1933). Contribution to this conflict is the shifting bottom deposits and the resultant changing of community structure and dynamics. The large annual temperature change 1° C to 26° C) in the study area also is a stressing factor that complicates faunal relationships and interactions and may produce reduced diversity. Thus at any one sampling time and station components of several communities may be present, resulting in a composite sample indicative more of stress than of stable community dynamics. Prediction is made extremely difficult.

Another factor in this conflict is sampling error. The Ponar grab obtains a large sample in soft substrates and a small sample in hard substrates, thus over-emphasizing the soft substrate communities and perhaps providing a distorted view of diversity. Gravel was field washed and not returned to the laboratory for further analysis, and although there is no specific evidence, this procedure may have reduced collection of Coleoptera and similar populations of grasping larval forms, since they may not have been washed loose.

Some of the apparent contradiction in substrate/diversity data may be superficial. The general shallowness of the area, coupled with the resultant intensive wave action (mixing), would be expected to result in a diminished diversity in the less stable detritus/silt medium; however, a greater diversity was found in this material at Locust Point. But the chief detritus/silt station (14) also was located farthest

offshore (i.e., was deepest), which would minimize the effects of wave action and promote stability. Therefore, although in an unstable medium, station 14 apparently was relatively more stable than the others.

Many of the species found in the Locust Point study area, particularly the Chironomids and Oligochaetes, are adapted to shifting bottom deposits and, as such, cannot be directly compared with the species from the more stable substrates which existed in the area studied by Krecker and Lancaster (1933). (Shelving rock, flat rubble, and angular rubble were not present at Locust Point.) In addition, the continuing degradation of the lake (Boughey, 1971), and the resultant stress on the community, has significantly reduced diversity and altered faunal relationships since their 1933 study. The chief constituents of the Locust Point fauna, being deposit feeders, find more stable feeding niches in the softer more fluid nutrient-rich substrates of today's lake.

Diversity Index Analysis and Its Implications

The use of diversity indices frequently has been disputed in the literature, the chief objection being an inability to determine the actual cause of diversity-value fluctuations. Diversity index formulae assume homogeneity between sampling areas. Peet (1974) has shown mathematically that only under conditions of identical sample size (virtually impossible in most field situations) and homogeneity between sampling areas, are two populations strictly comparable using any diversity index. He maintained that all types of indices are inappropriate for most ecological applications. However, in an attempt to more fully analyze the community dynamics at Locust Point, Wilhm's $\overline{d}$ (Wilhm and Dorris,

1968) determinations were calculated for the collected data, (Tables 9 & 10).

Problems other than substrate shifting contribute to difficulties in comparing faunal diversity values among collections. The changing trophic roles of pupae, larvae, and adults (within-species variation) must be considered, though there is no provision for such an inclusion in any of the diversity-index formulae currently in use (Peet, 1974; Cones, 1975).

Another inherent problem in analyzing macrobenthic populations using diversity indices is taxonomic, since organisms must be identified to the lowest taxonomic rank in order to effectively use the index. The placement of immature Oligochaetes into lower taxonomic groups is impossible due to lack of well-defined characters. Also the typical life cycle is highly variable, depending not only on species but on such environmental conditions as oxygen, temperature, and disturbance due to storm activity (Barnes, 1968; Pennak, 1953). Generally, cocoons containing embryos derived from sexual union are deposited on rocks, vegetation, debris, and bottom sediments in the late summer and early autumn, although syngamic reproduction has been reported as early as July (Pennak, 1953). Oligochaete young hatch from cocoons after 8-10 weeks (Barnes, 1968) and reach sexual maturity sometime later (one such cocoon was found in the 1974 season at Locust Point in August). The sampling procedure used, which entails a great deal of washing of the substrate, in all probability ruptures the cocoons, which would account for their paucity in the data.

The method most often encountered in the literature for diversity-index calculations is to ignore the immature Oligochaetes entirely. An

analysis of this type was performed and is presented in Table 9. Although widely practiced, this method produces meaningless data, since at many stations immature Oligochaetes consitute in excess of 50 per cent of the biomass.

Another method which could be used for immature Oligochaetes would be to simply divide the immatures among the matures, on a percentage basis in data for any given month. This method also is dubious, since seasonal life cycles do not guarantee that the immatures currently present are actually members of the current adult population (Pennak, 1953; Barnes, 1968).

A third method of dealing with immature Oligochaetes would be to attempt to match immature forms with mature forms of 12 weeks earlier, thus giving consideration to average life cycles. This method may be inaccurate, since the literature does not contain enough about life cycles to guarantee that the correct matches could be made. Analysis based on such matching was attempted, but it resulted in such unnatural overlapping of species that I feel that this system is not valid.

Performing diversity index analysis at a higher taxonomic level, the family level, thus ignoring the immature Oligochaete problem, also was performed using Wilhm's $\overline{d}$ (Table 10). Extremely low $\overline{d}$ values were generated by this method. Since the values are so low, any applied use, even with the previously outlined constraints, is precluded.

Taxonomy generally does not constitute a major problem in groups other than Oligochaetes, since other larval forms are usually more easily keyed to species, and other immature forms are easier to identify.

Values for $\overline{d}$, therefore, may be more valid for groups other than Oligochaetes. However, these other groups, except for the Chironomids, represent a very small proportion of the community biomass at Locust Point.

Close scrutiny of the faunal diversity index values generated at both levels for the Locust Point area (Tables 9-10) reveal no apparent trends. Because of shifting bottom deposits, there exist no two stations which can be validly compared over any period of time; commonly any one station did not exhibit the same substrate two months in a row, or even two samples in a row. The overall low values for family-level data do have some implications for pollution analysis, the low values being indicative of moderate pollution (Wilhm, 1967, 1970; Wilhm and Dorris, 1968).

The problems of shifting substrates, changing trophic roles with seasons, and immature Oligochaetes are not considered in any diversity index analysis at the present state of the art, although most benthic studies include an index analysis of some sort. Commonly dynamics vary between communities and introduce degrees of inaccuracy, which in many cases cannot be mathematically considered and are often not even understood. The n-dimensional hypervolume theory (Hutchinson, 1957) and the theories of Saunders (1958, 1969) and of Rhoads and Young (1970) point up the great complexity of community structure and the limits of the niche and suggest that two communities cannot be compared by diversity indices because of the almost infinite, and different, factors governing the niche. This is especially true at Locust Point with the present sampling program, which essentially samples 60 different small commun-

ities, rather than several large ones. Therefore, it is my feeling that $\overline{d}$ determinations computed for highly variable areas, such as the Locust Point study area, are not valid indicators of true community dynamics, and should be approached with caution. Their non-applicability to this lentic situation is in itself an important finding of this study.

Minimizing of Variance

Extremely high variance was evident in the high and variable standard deviation values obtained from the raw data when it was converted to benthos/m^2 (Appendices I-III), as well as in other statistical tests. In order to provide a "feel" for the number of samples necessary to be taken at each station to minimize variance to an acceptable level, the following formula was used (Snedecor and Cochran, 1967):

$$N \geqslant \frac{1.96^2 \times S^2}{L}$$

where:
- L = sample units acceptable on either side of the mean
- S^2 = sample variance
- 1.96 = the 0.05 confidence interval converted to Z units
- N = sample number

In all cases, values in excess of 2000 samples per station were calculated which obviously would have been prohibitive. Therefore, because of the extreme amount of work involved in triplicate sampling and because of the number of samples needed to provide statistically

reliable data, I recommend the abandonment of the triplicate sampling program and the resumption of the single-grab program.

The suspected source of the high variance in statistical comparisons was the substrate dynamics in the study area and the resultant population shifts. As the bottom changed between sample periods, so did the faunal associations and relative number of individuals, thus contributing to the high variance. Realization of these facts, coupled with the lack of significant differences between transects and between years, precluded further meaningful statistical comparisons.

Current Water Quality Status at Locust Point

The degradation of Lake Erie during the last 60-70 years has been well documented (Wright, 1955; Powers, et al., 1959; Beeton, 1960; Beeton, 1961; Verduin, 1964; Carr and Hiltunen, 1965; Carr, et al., 1965; Hunt, 1962; Britt, et al., 1968; Hiltunen, 1969; Edwards, 1970; Van Meter and Trautman, 1970; Boughey, 1971; Stuckey, 1971; Kelly and Cole, 1976). It is possible to make certain inferences about existing water quality at Locust Point by relating data accumulated during the present study to the existing data base.

Wright (1955) established criteria for classifying degrees of organic pollution based on the abundance of tubificids as follows: 1) heavy pollution $\geq$ 5000/m^2, 2) moderate pollution = 1000-5000/m^2, and 3) light pollution = 100-999/m^2. According to these criteria, average Oligochaete density during the study period for the Locust Point area suggests a low-to-moderate pollution level. Goodnight and Whitley (1961) also suggested a classification system in which the relative

abundance (number of individuals) of Oligochaetes in the benthos serves as a pollution index. In their classification, a stream is considered "good" if the bottom fauna is less than 60 per cent Oligochaete, "doubtful" if 60-80 per cent, and "highly polluted" if more than 80 per cent Oligochaete. By this method, Locust Point would be considered "doubtful".

Many of the species found at Locust Point have been classified in the Saprobian system by Weber (1973). These so-called "indicator" organisms, synopsized in Table 8, are present in the study area and suggest moderate organic pollution levels. It is necessary to point out again, however, that much of the Locust Point macrobenthos is adapted to the shifting substrate of the area, and for this reason, Saprobian organisms and Oligochaete criteria should be interpreted with caution. It may be that, rather than indicating organic enrichment and low oxygen in the study area, they are instead indicating shifting substrate.

Pseudochironomus, found with some regularity at Locust Point, represents an anomoly. It is classified by Weber as "intolerant", but is found in normal associations with "tolerant" and "facultative" species. In this case, the organism's preference for shifting substrate appears to be the overiding factor in its presence at Locust Point. Perhaps a better example of organismic indication of moderate organic pollution in the study area is the obvious absence of such clean-water orders as Ephemeroptera (mayflies), Plecoptera (stoneflies), and Trichoptera (caddis flies).

Plant life in the area also suggests moderate pollution. Species characteristic of clear, cool, well-oxygenated waters and those with

narrow ecological tolerances have virtually disappeared from the entire western basin over the last 70 years, giving way to species indicative of turbid, warm, poorly oxygenated water and those of wide tolerances (Stuckey, 1971).

Water-quality data for the Locust Point area, synopsized in Appendix IV, also suggest low-to-moderate organic pollution, exhibiting none of the anoxic conditions reported in some areas of the lake (Britt, et al., 1968). Although dissolved oxygen sags during the warmer summer months to 5 ppm, enough dissolved oxygen is present year-round to support the dominant Oligochaete/Chironomid association at Locust Point (Brinkhurst, 1965; Gaufin and Hern, 1971; Nebreker, 1971; Mason, 1973). Unfortunately, chemical requirements other than oxygen have not been determined for Oligochaetes and Chironomids, and the effects of the high primary nutrients at Locust Point on these organisms is unknown.

Diversity index values are often used to show relative degree of pollution (< 1 = high pollution, 1-3 = moderate pollution, > 3 = no pollution). Using these criteria, $\bar{d}$ values (Tables 9-10) suggest moderate pollution in the study area (Wilhm and Dorris, 1968), although, as previously determined, values generated for Locust Point are of doubtful value.

Biological and chemical data collected at Locust Point during the study period, therefore, indicate the presence of moderate organic water pollution. This analysis is undoubtedly confused by stress placed on the community by shifting bottom sediments.

Area of the Lake Bottom Affected And Predicted Effects of the Thermal Effluent

The temperature of the cooling water discharged by the Davis-Besse plant into the lake is limited by NRC and EPA regulations to a maximum of 20° F above ambient lake temperature and is to be maintained below this level by dilution and manipulation of cooling tower and blow-down water. Plume sizes for the maximum hot-water discharge situation which is predicted to occur in April, have been calculated (Toledo Edison Env. Rept., 1971) and show the lake area affected by elevated temperature (Fig. 8) to be relatively small (Table 14). The 6° F (above lake temperature) plume is predicted to be 142 feet long and 36 feet wide and to affect 0.10 acre of lake bottom; the 1° F plume is predicted to reach a maximum of 840 feet long and 210 feet wide and to affect 3.48 acres of lake bottom. Thus, the 1° F plume affects only station 13 of the present benthic study, while the 2° F and warmer plumes are so small that they do not affect any of the present benthic stations. Because the water will enter the lake at a high velocity (6.7 feet/sec. sec.), natural water and wind currents are predicted to have little effect on the plume configuration; thus it is predicted that only at times of unusual meterological or physical conditions will the plume affect benthos at any station other than at station 13.

The concern for the phenomenon of thermal waste input into aquatic systems is relatively new and, as such, few field studies have been conducted to assess its impact on natural ecosystems. Thermal effects on physiological processes are well documented (most notably, Brett, 1960, and Hutchinson, 1961); however, such studies usually are laboratory

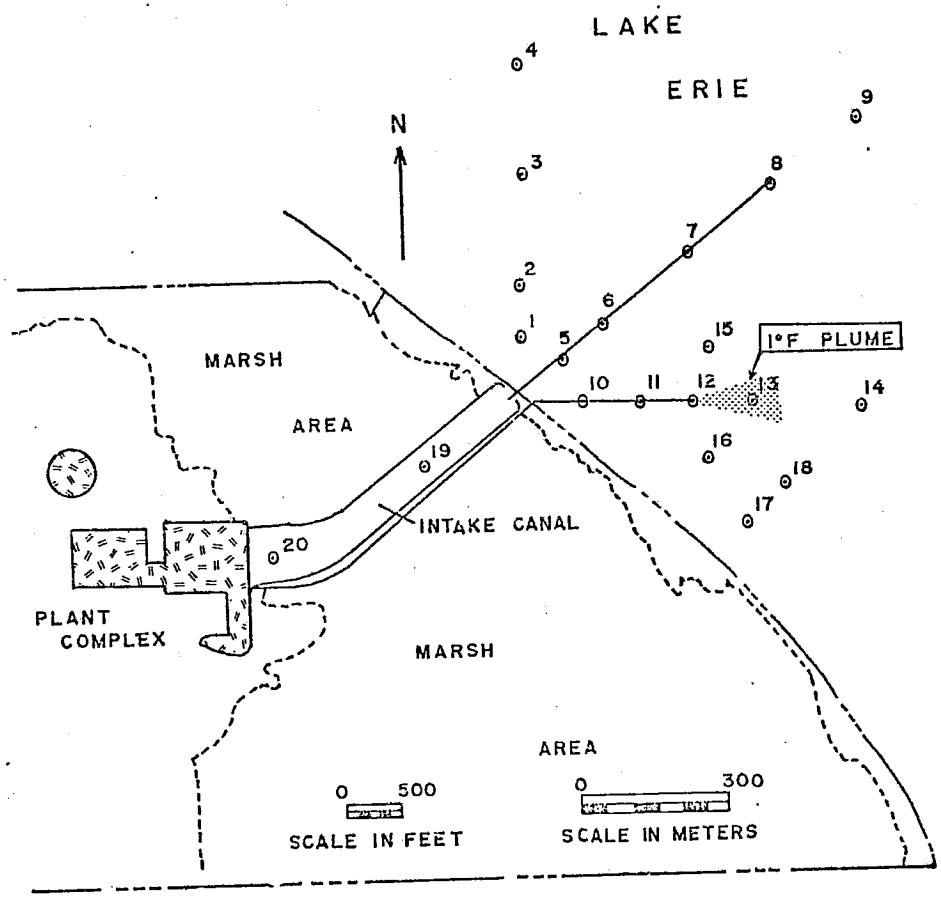


Figure 8. The Locust Point study area showing the projected area covered by the 1F° plume (plume dimension data taken from Toledo Edison Env. Rept. Data).

TABLE 14

COMBINED EFFLUENT TO LAKE ERIE FROM THE COLLECTING BASIN AT MAXIMUM OPERATING FLOW AND TEMPERATURE CONDITIONS WITH MAXIMUM TEMPERATURE RISE - 20.0°F - AREAS AND DIMENSIONS OF WARMED WATER PLUMES FOR ISOTHERM LINES

(ADAPTED FROM TOLEDO EDISON ENVIRONMENTAL REPORT DATA)

Temperature Above Lake	Plume Dimensions				Lake Area Affected (acres)
	Length		Width		
	m	ft	m	ft	
6F°	43.3	142	10.9	36	0.10
5F°	54.9	180	13.7	45	0.16
4F°	74.1	243	18.6	61	0.24
3F°	104.5	343	26.8	88	0.62
2F°	155.5	510	39.0	128	1.28
1F°	236.0	840	64.0	210	3.48

oriented, and their actual application to field situations have not been determined. The literature on thermal pollution and its laboratory effects on organisms, especially fish, is voluminous (synopsized in Raney, 1969, and Coutant and Goodyear, 1972). Because of the specificity of past field studies, however, their use in predicting the effects of the heated-water discharge at the Davis-Besse site on the benthic invertebrate population is uncertain. Even so, certain facts lend themselves to some discussion.

The effects of thermal input on the ecosystem are numerous. Thermal effluents have been shown to increase the susceptability of certain organisms to toxic substances. In addition, increased heat has been tied to fish attraction, altering of reproduction and developmental processes, accelerated growth rates and processes, and the changing oxygen content of the receiving water.

Increased temperature and its effects on certain aquatic insects have been analyzed in river and estuary systems by numerous authors. Predominantly, the concern of researchers has been effects on fish-food organisms. Findings suggest that the additions of slight amount of heat increase primary productivity in the ecosystem, which ultimately should make itself felt in the upper trophic levels, thus presumably increasing the biomass of fish-food species (Coutant and Carpenter, 1972).

Analysis of fish-stomach contents at Locust Point, however, revealed that little of the food came directly from the macrobenthos (Herdendorf, et al., 1973, 1974, 1975). Plankton and detritus (unidentified material, chiefly plant tissue) constituted much of the diet of the fish in this

part of the lake. Some loss (or gain) of the macrobenthic population in the plant discharge area would, therefore, most likely have little affect on the fish population. There is some evidence (Wariner and Brehmer, 1966) that fish may congregate during the winter in warmed areas, which would place a stress on fish-food items in that area; however, studies in Par Pond in Georgia (Beyers, 1973) indicated that the effect of this congregating on food organisms is not significant. (Fish have been collected at the Locust Point study area since 1969, and thermal-shock responses have been determined for the more commonly occurring species in this part of the lake (Reutter and Herdendorf, 1976).

One of the chief factors in thermal pollution is the increased metabolic rate which may result in increased susceptability to toxic substances due to increased uptake and metabolism (Cairns, et al., 1975). Eisler (1969), for example, reported toxicity of DDT to crustaceans at increased temperature to be higher but variable and frequently species-dependent. Aquatic algae, bacteria, and protozoa were found by Rehwoldt (1972) to take up increased amounts of heavy-metal ions at increased temperature. The effect again was species-dependent. Mercury and certain heavy metals are present in the sediments of the western basin of Lake Erie (Walters, 1975) and are therefore available for organism concentration.

Increased heat has been shown to alter, either directly or indirectly, the reproductive processes of several species. The most common effect is a prolongation of the breeding season in such fish species as the largemouth bass (Bennett and Gibbons, 1975) and the

mosquito fish (Ferens and Murphy, 1974). Such prolongation has also been shown in a frog species (Nelson, 1974). Because the impacted area at Locust Point is so small and because no spawning grounds are involved (Jeffrey Reutter, personal communication, 1975) effects of this nature will probably be of no consequence.

An associated aspect of elevated temperature is the effect it may have on the synchrony of developmental processes in food-chain organisms. Accelerated growth and reproduction may result in premature hatching of young into a system not yet advanced enough to accept them. The impact on higher trophic-level organisms is obvious.

Another phenomenon associated with increased temperature and metabolism rates is the accelerated growth rates of certain species. Gibbons (1970) found such acceleration to be true for the yellow-bellied slide turtle, and Bennett and Gibbons (1974) found it to occur in young largemouth bass in thermal areas. The same phenomenon had been demonstrated at the Savannah River Plant in South Carolina for dragon-fly larvae and aquatic snails (Gibbons and Sharitz, 1974). To date, no evidence has appeared suggesting similar acceleration of benthic macroinvertebrate growth except for clams and oysters in salt water (Kinne, 1963; Dexter Haven, personal communication, 1976); however, it is reasonable to believe such a phenomenon could occur in all groups.

Increased metabolism also may accelerate various life processes. Drastic alterations of life-histories are possible, which could result ultimately in selection of more thermal-tolerant organisms, as Nelson (1974) found with frogs in a thermally-elevated reservoir. Holland,

et al. (1974) and Yardley, et al (1974) have shown natural selection to favor thermal-tolerant individuals in the blue gill and largemouth bass populations of ponds receiving thermal wastes from nuclear reactors.

Also of importance is the effect of warm water on oxygen content. Oxygen solubility decreases as temperature rises; water at maximum oxygen saturation holds approximately 13.2 ppm O_2 at 4° C and only 7.7 ppm at 30° C. In addition, the impact of the B.O.D. in the Locust Point area will be intensified by temperature increases, since the quantity of oxygen needed will be a large proportion of the existing supply. The direct effect of a temperature increase on respiration or chemical toxicity, therefore, may be controlled in part through the lower availability of dissolved oxygen to aquatic organisms (Cairns and Scheier, 1957; Sprague, 1963). Ambühl (1959) and Phillipson (1954) found that some organisms do well with dissolved oxygen content of 5 ppm or less; however, they both pointed out that the absolute threshold value of O_2 is contingent not only on temperature but also on water velocity, greater water velocity minimizing low oxygen effects.

Studies dealing with oxygen requirements of specific invertebrates are lacking, thus making prediction difficult. (In fact, benthic macroinvertebrates as a group are very poorly researched in relation to environmental tolerances; the main thrust has been toward taxonomy.) However, in 1972, Nebeker reported laboratory studies in which *Tanytarsus dissimilis* showed a 96-hour and a 30-day LC_{50} of 0.6 ppm O_2. The ten benthic macroinvertebrates he studied all were capable of tolerating, for extended periods, low levels (3.9 - 0.6 ppm) of

dissolved oxygen. He further pointed out that some invertebrates, such as mayflies, require higher dissolved oxygen levels (> 9.0 ppm) for emergence, but that *Tanytarsus* did not. In the summer months at Locust Point, oxygen sags down to 5 ppm are common, which is well above the 0.6 ppm minimum value determined for *Tanytarsus*. Likewise, although not named by genus, Tubificids, abundant in the study area, are known to tolerate near-anoxic conditions (Bartsch and Ingram, 1959; Brinkhurst, 1965; Barnes, 1968). Therefore, it is unlikely that decreased oxygen content due to warm water will noticeably affect the predominately low-dissolved-oxygen-tolerant benthic population at Locust Point, unless anoxic conditions are attained, an unlikely possibility because of water circulation patterns in the area.

The possibility does exist that a shift in primary producer species composition and a reduction in diversity may occur locally. As water temperature increases, algal populations shift from diversified diatom communities to green algal forms to blue-green populations of low diversity. On a lake-wide basis, this shift could cause far-reaching consequences in food webs; however, in the very small area that will be thermally affected at Locust Point, such a shift, if it does occur, would most likely have little impact.

There are numerous, and often subtle, variables to consider when ascertaining thermal effects on organisms. Vernberg (1963) emphasized body size, stage in life cycle, sex, habitat, interactions among environmental factors, season, and possible acclimation or adaption as factors of concern in thermal studies. One aspect of the work of Warinner and Brehmer (1966) illustrates the difficulty of predicting the effects

of thermal pollution on organisms. In their study on primary productivity in a thermally stressed area, they found that, at low temperatures (5-10°C), production increased with thermal increase; as ambient temperatures rose (10-15°C), a small heat addition (3C°) raised production; but more heat depressed activity. As natural temperatures rose above 25°C, all thermal additions of 3.5C° or more depressed activity. Loosanoff (1950) had similar difficulty when working with the oyster. He found that pumping rates were negligible at temperatures below 3°C, increased rapidly from 8-16°C, showed little or no change from 16-28°C, and increased further to a maximum between 28-34°C. Brett (1960) found that the primary thermal requirement of each species is for the thermal range within which adequate activity is possible. Below this range, thermal additions have no effect; above it, they mean death.

The presence of *Branchiura sowerbyi* at Locust Point may afford the opportunity to utilize an indicator organism to evaluate the effects of the hot-water discharge on the local benthic community. *Branchiura sowerbyi* is a tropical, readily recognizable Oligochaete which has been reported in the north only from Lake St. Clair and Lake Erie (Hiltunen, 1969). This species may have a one-year or a two-year life cycle, depending on local habitat conditions. There appear to be only three factors affecting the life cycle: temperature, oxygen, and organic content of the substrate (Carroll and Dorris, 1972). Further research into the life history of this large Tubificid may result in a temperature "key" to environmental dynamics at the Locust Point study area.

In summary, increased water temperature at Locust Point probably will cause some environmental changes; however, they will be localized

and minimal. Metabolic rates of the benthic invertebrates in the path of the plume most likely will increase and some localized reduction of the dissolved oxygen will occur, although probably not to dangerous (anoxic) levels. The thermal plume of the Davis-Besse plant is expected to be quite small and will affect only a very small area of lake bottom. Evidence suggests, as Lavin, et al. (1970) states: "The result of several ecological studies around actual operating plants is that, with a few exceptions, there has not been any major damage to the aquatic environment from the heated effluents of existing power plants".

Statistical analysis of the Locust Point macroinvertebrate data reveals extreme variability, due to bottom-deposit differences and subsequent population fluctuations. Because of this variability and the presence of organic pollution at Locust Point, environmental changes related to the heated discharge will be masked and the precise effect on the lake will be very difficult, if not impossible, to ascertain.

SUMMARY

1. Over the last 30 years, macrobenthic associations indicative of polluted water have developed in the western basin of Lake Erie. At the Locust Point study area, chemical data, as well as the presence of the dominant Oligochaete/Chironomid association, indicates the occurrence of moderate organic pollution.
2. Other than numerical fluctuations attributed to normal population dynamics and dredge disturbance, there has been little change in macrobenthic associations at the Locust Point study area over the

last three years (1972-1975)(Support of initial Hypothesis 1).

3. Dredged portions of the study area have been recolonized. It is difficult, however, to assess the degree of recolonization because of the redredging of the lines and the substrate dynamics of the area (Support of initial Hypothesis 2).
4. The macrobenthic fauna at Locust Point exhibited the greatest diversity in detritus/silt substrates. Next greatest diversity was shown in soft clay followed by hard clay, sand/gravel, and, finally, sand substrates (Negation of initial Hypothesis 3).
5. Because of the high variance in the data, the triplicate grab program should be abandoned in favor of the single grab program. In excess of 200 samples per station would be needed to minimize variance and permit meaningful statistical comparisons.
6. Wilhm's $\bar{d}$ determinations are not applicable to the lentic situation at Locust Point.
7. Increased water temperature at Locust Point due to thermal input from the nuclear power plant will likely cause some very local environmental changes. However, the small thermal plume will impact only on a very small area of the bottom, thus minimizing effects. Statistical analysis of the collected data reveals extreme variability, attributed to shifting bottom deposits and consequent population fluctuations. Because of this variability and the presence of moderate organic pollution at Locust Point, environmental changes related to the heated discharge will be masked; and the precise effect of the thermal plume on the lake will be very difficult, if not impossible, to ascertain (Support of initial Hypothesis 4).

LITERATURE CITED

Ambuhl, H. 1959. Die Bedrutung der Stromung als okologischer Faktor. Schweiz. Z. Hydrol 21:133-264.

Barnes, R. D. 1968. Invertebrate zoology. W. B. Saunders Co., Philadelphia. 743 pp.

Bartsch, A.F. and W.C. Ingram. 1959. Stream life and the pollution environment. U.S. Dept. H.E.W. Pub. Wks. Pub. 90(7):104-110.

Beeton, Alfred M. 1960. Great Lakes limnological investigations. Proc. 3rd Conf. Great Lakes Res., Present Status and Future Needs. Mich. Inst. Sci. Tech., Great Lakes Res. Div., Pub. No. 4:123-128.

Beeton, Alfred M. 1961. Environmental changes in Lake Erie. Trans. Amer. Fish. Soc. 90(2):153-159.

Bennett, D.H. and J. W. Gibbons. 1974. Growth and condition of juvenile largemouth bass (*Micropterus salmoides)* from a reservoir receiving thermal effluent In: Thermal ecology, J. W. Gibbons and R. R. Sharitz (eds.). AEC Symposium Series (CONF-730505), Springfield, Va.:NTIS, U.S. Dept. Comm.:246-254.

Bennett, D.H. and J. W. Gibbons. 1975. Reproductive cycles of large-mouth bass (*Micropterus salmoides)* in a cooling reservoir. Trans. Amer. Fish. Soc. 104(1):77-82.

Beyers, Robert J. 1973. Ecological studies in a cooling reservoir in the southeastern United States In: Gallagher, Brian J. (ed.) 1973.. Proceedings of a symposium on "Energy production and thermal effects" held at the Oak Brook Hyatt House, Oak Brook, Illinois, 10-11 Sept. 1973.

Boughey, Arthur S. 1971. Man and the environment: an introduction to human ecology and evolution. The MacMillan Co., New York. 472 pp.

Brett, J. R. 1960. Thermal requirements of fish-three decades of study, 1940-1970 In: Biological problems in water pollution. Trans. 1959 Seminar, Robert A. Taft Eng. Center Tech. Rept. W60-30:110-117.

Brinkhurst, R.O. 1964. Studies on the North American aquatic Oligochaeta I. Naididae and Opistochstidae. Proc. Acad. Nat. Sci., Phila. 116: 195-230.

Brinkhurst, R. O. 1965. Studies in the North American aquatic Oligo-chaeta I. Tubificidae. Proc. Acad. Nat. Sci., Phila. 117:117-172.

Brinkhurst, R. O. 1966. Detection and assessment of water pollution using oligochaete worms. Water Sew. Works 113:398-441.

Brinkhurst, R. O. and David G. Cook. 1966. Studies on the North American aquatic Oligochaeta III. Lumbriculidae and additional notes and records of other families. Proc. Acad. Nat. Sci., Phila. 118:1-33.

Brinkhurst. R. O., A. I. Hamilton, and H. B. Harrington. 1968. Components of the bottom fauna of the St. Lawrence, Great Lakes. Great Lakes Inst., U. of Toronto, Pub. No. 33. 49 pp.

Britt, N. W. 1966. Benthic changes in the island area of western Lake Erie during the past 15 years as indicated by 1959-1965 bottom fauna collections. Wheaton Club Bull., New Ser. 11:14-15.

Britt, N. W., E. J. Skoch, and K. R. Smith. 1968. Record low dissolved oxygen in the island area of Lake Erie. Ohio J. Sci. 68(3):175-179.

Brown, Jr., Edward H. 1953. Survey of the bottom fauna at the mouths of ten Lake Erie, southshore rivers. Lake Erie Pollution Survey, Ohio Dept. Nat. Res., Div. Water, Final Report. 201 pp.

Butcher, R. W. 1955. Relation between the biology and the polluted condition of the Trent. Verh. Internat. Ver. Theoret. Angew. Linnol. 12:823-827.

Cairns, Jr., John and H. Scheier. 1951. The effects of periodic low oxygen upon the toxicity of various chemicals to aquatic organisms. Purdue Univ. Eng. Bull., Ext. Serv. 94:165-170.

Cairns, Jr., John and Kenneth L. Dickson. 1971. A simple method for the biological assessment of the effects of waste discharges on aquatic bottom dwelling organisms. JWPCF 43(5):755-772.

Cairns, Jr., John, Alan G. Heath, and Bruce C. Parker. 1975. Temperature influence on chemical toxicity to aquatic organisms. JWPCF 47(2):267-280.

Carr, John R. and Jarl K. Hiltunen. 1965. Changes in the bottom fauna at Western Lake Erie from 1930 to 1961. Limnol. Oceanogr. 10(4): 551-569.

Carr, J. F., V. C. Applegate, and M. Keller. 1965. A recent occurrence of thermal stratification and low dissolved oxygen in Western Lake Erie. Ohio J. Sci. 65:319-327.

Carroll, Jr., J. H. and T. C. Dorris. 1972. The life history of *Branchiura sowerbyi*. Amer. Midl. Natur. 87(2):413-422.

Cones, Jr., H. N. 1975. The use (and misuse) of species diversity indices. Theoretical paper presented at Bowling Green State University. 30 pp.

Coutant, C. C. and C. P. Goodyear. 1972. Thermal pollution--biological effects: a literature review. JWPCF 44:1250-1272.

Crossman, J. S., R. L. Kaesler, and J. Cairns, Jr. 1974. The use of cluster analysis in the assessemnt of spills of hazardous materials. Amer. Mid. Nat. 92(1):94-114.

Dayton, Paul K. 1971. Competition, disturbance and community organization: the provision and subsequent utilization of space in a rocky intertidal community. Ecol. Mono. 41:351-389.

Edwards, W. and L. L. Harrold. 1970. Agricultural pollution of water bodies. Ohio J. Sci. 70(1):50-56.

Eisler, R. 1969. Acute toxicities of insecticides to marine decapod crustaceans. Crustaceana 16:302.

Farrell, M. A. 1930. A biological survey of the St. Lawrence watershed. IX. studies of the bottom fauna in polluted areas. Biol. Survey No. 5, Supp. Twentieth Ann. Rept.:192-197.

Ferens, M. C. and T. M. Murphy. 1974. Effects of thermal effluents on populations (*Gambusia affinis*) In: Thermal ecology, J. W. Gibbons and R. R. Sharitz (eds.). AEC Symposium Series (CONF-730505), Springfield, Va., NTIS, U.S. Dept. Comm.:237-245.

Forsyth, Jane L. 1966. The geology of the Bowling Green area, Wood County, Ohio. Sigma Gamma Epsilon Compass 43(4):202-214.

Forsyth, Jane L. 1973. Late glacial and postglacial history of western Lake Erie. Sigma Gamma Epsilon Compass 51(1):16-26.

Gaufin, A. R. and C. M. Tarzwell. 1956. Aquatic macroinvertebrate communities as indicators of organic pollution in Lytle Creek. Sewage and Indust. Wastes 28:906-924.

Gaufin, A. R. 1958. The effects of pollution on a midwestern stream. Ohio J. Sci. 58(4):197-208.

Gaufin, R. F. and S. Hern. 1971. Laboratory studies on tolerance of aquatic insects to heated waters. J. Kans. Entomol. Sci. 44:240-249.

Gibbons, J. W. 1970. Reproductive dynamics of a turtle (*Pseudemys scripta*) population in a reservoir receiving heated effluent from a nuclear reactor. Can. J. Zool. 48:881-885.

Gibbons, J. W. and R. R. Sharitz. 1974. Thermal alteration of aquatic ecosystems. Amer. Sci. 62(6):660-670.

Goodnight, C. J. and L. S. Whitley. 1961. Oligochaetes as indicators of pollution. Proc. 15th Ind. Waste Conf., Purdue Ext. Ser.: 106-139.

Hairston, Nelson G. 1959. Species abundance and community organization. Ecol. 40(3):404-416.

Herdendorf, C. E. 1970. Limnological investigatons of the spawning reefs of western Lake Erie with particular attention to their physical characteristics. Ph.D. Diss. Ohio State University. 203pp.

Herdendorf, C. E. 1972. Anticipated environmental effects of constructing water intake and discharge pipelines in Lake Erie at the Davis-Besse nuclear power station. Report prepared for the Toledo Edison Co., Toledo, Ohio. (Unpublished) 12pp.

Herdendorf, C. E. and E. M. Hair. 1972. Aquatic biology of Lake Erie in the vicinity of Locust Point, Ohio. Prepared for the Toledo Edison Co., CLEAR-OSU Tech. Rept. 23. 30 pp.

Herdendorf, C. E., et al. 1972. Environmental evolution of a nuclear power plant on Lake Erie: benthos populations prior to discharge. Federal Aid Proj. F-41-R-3. June 1, 1969-May 31, 1972. 21 pp.

Herdendorf, C. E., et al. 1973. Environmental evolution of a nuclear power plant on Lake Erie. Federal Aid Proj. F-41-R-4. June 1, 1972-May 31, 1973. 45 pp.

Herdendorf, C. E., et al. 1974. Pre-operational aquatic ecology monitoring program for the Davis-Besse Nuclear Power Station, Unit 1. Prepared for the Toledo Edison Co., Contract No. 1780. CLEAR-OSU.

Herdendorf, C. E., et al. 1975. Pre-operational aquatic ecology monitoring program for the Davis-Besse Nuclear Power Station, Unit 1. Prepared for the Toledo Edison Co., Contract No. 1780. CLEAR-OSU, in press.

Hiltunen, Jarl K. 1969. Distribution of Oligochaetes in western Lake Erie, 1961. Limnol. Oceanogr. 14(2):260-264.

Hiltunen, Jarl K. 1973. A laboratory guide keys to the Tubificid and Naidid Oligochaetae of the Great Lake region. Unpublished. 26 pp.

Holland, W. E., M. H. Smith, J. W. Gibbons, and D. H. Brown. 1974. Thermal tolerances of fish from a reservoir receiving heated effluent from a nuclear reactor. Physiol. Zool. 17:110-118.

Howmiller, R. P. and A. M. Beeton. 1971. Biological evaluation of environmental quality, Green Bay, Lake Michigan. JWPCF 43(1):123-133.

Hunt, G. S. 1962. Water pollution and the ecology of some aquatic invertebrates in the lower Detroit River. Proc. 5th Conf. Great Lakes Res., Univ. Mich. Inst. Sci. Tech., Great Lakes Res. Div., Pub. No. 9:29-49.

Hutchinson, G. E. 1957. Concluding remarks. Cold Springs Harbor Sym. Quant. Biol. 22:415-427.

Hutchinson, V. H. 1961. Critical thermal maxima in salamanders. Physiol. Zool. 34:92-125.

Hynes, H. B. N. 1960. The biology of polluted waters. Liverpool Univ. Press, Liverpool, England. 202pp.

Kelly, J. E. and R. C. Cole. 1976. The distribution and abundance of benthic macroinvertebrates near the western shore of Lake Erie. Inst. of Water Research, Mich. State Univ., Tech. Rept. No. 327. 85pp.

Kinne, O. 1963. The effects of temperature and salinity on marine and brackish water animals. I. temperature. Oceanogr. Mar. Biol. Annul. Rev. 1:301-340.

Kolkwitz, R. and M. Marsson. 1909. Oekologie der tierische Saprobien. Beitage gur Lehre von der biologische Gewasserbearterlung. Inter. Rev. Hydrolbiol. 2:126-152 (Translated by the U.S. Joint Publications Research Service, Washington, D.C.).

Krebs, Charles H. 1972. Ecology: the experimental analysis of distribution and abundance. Harper and Row, New York. 694pp.

Krecker, Frederick H. and L. Y. Lancaster. 1933. Bottom shore fauna of western Lake Erie: a population study of a depth of six feet. Ecol. 14:79-93.

Lenhard, G. 1965. Bottom deposits. A vital self-purification system in the degradation of polluting material in natural waters and in biological treatment of effluents. Hydrogiologia 25(3/4):404-411.

Levin, A. A., Thomas J. Birch, Robert E. Hillman, and Gilbert E. Raines. 1970. A comprehensive appraisal of the effects of cooling water discharge on aquatic ecosystems. NTIS Pub. No. 223-662. 49pp.

Loosanolf, V. L. 1950. Rate of water pumping and shell movements of oysters in relation to temperature. Anat. Record 108. Abst. 229.

Margalef, R. 1956. Informacion y diversidad espichica en las cominadades de organismos. Invest. Pesquera, 3:99-106.

Mackenthun, K. M. 1969. The practice of water pollution biology. U.S. Dept. Int., FWPCA, Washington, D.C. 281pp.

Mason, Jr., William T. 1973. An introduction to the identification of chironomid larvae. Analyt. Qual. Con. Lab., Nat. Env. Res. Cen., USEPA, Cincinnati. 90pp.

Mason, Jr., W. T., J. B. Anderson, and G. E. Morrison. 1969. A limestone filled artifical substrate sampler-float unit for collecting macroinvertebrates in large streams. Progr. Fish. Cult. 29:74.

Miller, John A. 1929. The leeches of Ohio. OSU-F. T. Stone Laboratory Contrib. No. 2. OSU Press. 38pp.

Nebeker, A. V. 1971. Effects of water temperature on nymphal feeding rate, emergence and longevity of the stonefly, *Pteronarcys dorsata*. J. Kans. Entomol. Soc. 44:21-25.

Nebeker, A. V. 1972. Effects of low oxygen concentrations on survival and emergence of aquatic invertebrates. J. Amer. Fish. Soc. 101:675.

Nelson, D. H. 1974. Growth and developmental responses of larval toad populations to heated effluent in a South Carolina reservoir In: Thermal ecology, J. W. Gibbons and R. R. Sharitz (eds.). AEC Symposium Series (CONF-730505). Springfield, Va., NTIS, U.S. Dept. Comm.:264-275.

Odum, Eugene P. 1971. Fundamentals of ecology (3rd ed.), W.B. Saunders Co., Philadelphia. 574pp.

Olive, John H. and Charles A. Dambach. 1973. Benthic macroinvertebrates as indices of water quality in Whetstone Creek, Morrow County, Ohio (Scioto River Basin). Ohio J. Sci. 73(3):129-149.

Patten, B. C. 1962. Species diversity in net phytoplankton of Raritan Bay. J. Mar. Research 20:57-75.

Peet, Robert K. 1974. The measurement of species diversity In: Johnston, R. F., et al. (eds.). 1974. Ann. Review of Ecol. and Systematics 5:285-309.

Pennak, R. W. 1953. Freshwater invertebrates of the United States. Ronald Press, New York. 769pp.

Phillipson, J. 1954. The effect of water flow and oxygen concentration on six species of caddisfly (Trichoptera) larvae. Proc. Zoo. Soc. London 124:347-364.

Powers, Charles F., David L. Jones, Paul C. Mundinger, and John C. Ayers. 1959. Exploration of collateral data potentially applicable to Great Lakes hydrography and fisheries. Final Report, Phase II. U.S. FWS, contract No. 14-19-008-9381. Great Lakes Res. Inst., Univ. Mich. 164pp.

Raney, E. D. and B. W. Menzel. 1969. Heated effluents and effects on aquatic life with emphasis on fishes - a bibliography. Bull. 2, Ichthyological Assoc., Ithaca, N.Y.

Rehwadt, R. 1972. The effect of increased temperature upon the acute toxicity of some heavy metal ions. Bull. Environ. Contam. Toxicol. 8:91.

Resh, Vincent H. and John D. Unzicker. 1975. Water quality monitoring and aquatic organisms: the importance of species identification. JWPCF 47(1):9-19.

Reutter, Jeffrey M. and Charles E. Herdendorf. 1976. Thermal discharge from a nuclear power plant: predicted effects on Lake Erie fish. Ohio J. Sci. 76(1):39-45.

Rhoads, D. C. and D. K. Young. 1970. The influence of deposit feeding organisms on sediment stability and community trophic structure. J. Mar. Res. 28:150-178.

Sanders, H. L. 1958. Benthic studies in Buzzards Bay I. animal-sediment relationships. Limnol. Oceanogr. 3:245-258.

Sanders, H. L. 1969. Benthic marine diversity and the stability time hypothesis. Brookhaven Symposium "Diversity and Stability in Ecological Systems" 22:71-81.

Shelford, V. E. and M. W. Boesel. 1942. Bottom animal communities of the island area of western Lake Erie in the summer of 1937. Ohio J. Sci. 42(5):179-190.

Smith, K. R. 1966. A comparison of benthic oligochaete fauna from two different stations in the Put-in-Bay region of Lake Erie. M. Sci. Thesis, Ohio State University, Columbus, Ohio.

Snedecor, G. W. and W. G. Cochran. 1967. Statistical methods. The Iowa State University Press. Ames, Iowa. 593pp.

Sprague, J. B. 1963. Resistance of four freshwater crustaceans to lethal high temperatures and low oxygen. J. Fish. Res. Bd. Can. 20:387-415.

Stein, Carol B. 1962. Key to the freshwater mussels (Family Unionidae) of western Lake Erie. Unpublished. 7pp.

Stuckey, Ronald L. 1971. Changes of vascular aquatic flowering plants during 70 years in Put-in-Bay harbor, Lake Erie, Ohio. Ohio J. Sci. 71(6):321-342.

Surber, Eugene W. 1953. Biological effects of pollution in Michigan waters. Sewage and Indust. Wastes 25(1):79-86.

Turner, Clarence L. 1926. The crayfishes of Ohio. Ohio Biol. Survey Bull. No. 13(3):145-195.

Van Meter, Harry D. and Milton B. Trautman. 1970. An annotated list of the fishes of Lake Erie and its tributary waters exclusive of the Detroit River. Ohio J. Sci. 70(2):65-78.

Verduin, J. 1964. Changes in western Lake Erie during the period 1948-1962. Verhandl. Intern. Ver. Limnol. 15:639-644.

Warinner, J. E. and M. L. Brehmer. 1966. Effects of thermal effluents on marine organisms. Int. J. Air Water Poll. 10:277-289.

Ward, H. B. and G. C. Whipple. 1966. (W. T. Edmondson, ed.) Freshwater biology. John Wiley and Sons, New York. 1248pp.

Weber, C. I. 1973. Biological monitoring of the aquatic environment. Biological methods for the assessment of water quality. Amer. Soc. Test. Mat., STP 528:46-60.

Wilhm, J. L. 1967. Comparison of some diversity indices applied to populations of benthic macroinvertebrates in a stream receiving organic wastes. JWPCF 39(1):1673-1683.

Wilhm, J. L. 1970. Range of diversity index in benthic macro-invertebrate populations. JWPCF 42(5):221-224.

Wilhm, J. L. and T. C. Dorris. 1968. Biological parameters for water quality criteria. BioScience 18(6):477-480.

Wood, K. G. 1953. Distribution and ecology of certain bottom dwelling invertebrates of the western basin of Lake Erie. Ph.D. Diss., Ohio State University, Columbus, Ohio.

Wood, K. G. 1963. The bottom fauna of western Lake Erie, 1951-52. Great Lakes Res. Div., Inst. Sci. and Tech., Univ. Mich. Pub. No. 10:258-265.

Wright, Stillman. 1955. Limnological survey of western Lake Erie. U.S. Fish. and Wildlife Serv., Spec. Sci. Rept., Fish No. 139. 341pp.

Yardley, D., J. C. Avise, M. H. Smith, and J. W. Gibbons. 1974. Biochemical genetics of sunfish III. genetic subdivision of populations inhabiting heated waters from nuclear reactors In: Thermal Ecology. J. W. Gibbons and R. R. Sharitz (eds.). AEC Symposium Series (CONF-730505). Springfield, Va., NTIS, U.S. Dept. Comm.: 255-263.

APPENDIX I

ANALYSIS OF MACROBENTHOS SAMPLES
1972

Analysis of Benthos Populations at Locust Point
July, 1972

BENTHOS SAMPLES	Sta. 1	Sta. 2	Sta. 3	Sta. 4	Sta. 5	Sta. 6	Sta. 7	Sta. 8	Sta. 9
COELENTERATA									
Hydra sp.									
PLATYHELMINTHES									
Planariidae									
ANNELIDA									
Hirudinea									
Glossiphonia complanata									
Helobdella stagnalis									
Helobdella elongata									
Oligochaeta									
Tubificidae									
Branchiura sowerbyi				18					72
Limnodrilus cervix				18			18		
L. claparedeanus									18
L. claparedeanus-cervix									
L. hoffmeisteri									
L. maumeensis									
L. udekemianus									
Potamothrix moldaviensis				144					36
P. vejdovskyi									
Immature			6	1738			1195	724	2045
Naididae									
Nais sp.									
Naidium sp.									36
Pristina sp.									
Stylaria sp.									
Uncinais uncinata sp.									
ARTHROPODA									
Isopoda									
Asellus sp.									
Amphipoda									
Gammarus fasciatus			6						18
Hyalella azteca									
Ephemeroptera									
Caenis sp.						54			
Trichoptera									
Athripsodes sp.									
Oecetis sp.									
Polycentropus sp.									

Notes: 1. Sample Collection Date: July 7-11, 1972
2. Reported as No./m^2

Analysis of Benthos Populations at Locust Point
July, 1972

BENTHOS SPECIES	Sta. 1	Sta. 2	Sta. 3	Sta. 4	Sta. 5	Sta. 6	Sta. 7	Sta. 8	Sta. 9
ARTHROPODA (Cont.)									
Limnephilidae									
Chironomidae									
Chironominae									
Chironomus (Chironomus) sp.		18		18			18	18	
C. (Cryptochironomus) sp.								36	18
Polypedilum sp.				72					
Pseudochironomus sp.						18	36		
Tanytarsus sp.							91	36	54
Tanypodinae									
Coelotanypus sp.									
Procladius sp.									
Orthocladiinae									
Cricotopus sp.									
Psectrocladius sp.									
MOLLUSCA									
Gastropoda									
Amnicola sp.									
Bulimus sp.									
Gyraulus sp.									
Physa sp.									
Pleurocera-Goniobasis sp.									
Valvata sp.									
Pelecypoda									
Unionidae									
Amblema plicata				18					
Lampsilis ventricosa									
L. radiata									
Leptodea fragilis									
Ligumia recta									
Potamilus alatus									
Quadrula pustulosa									
Sphaeriidae									
Pisidium sp.									
Sphaerium sp.									

Notes: 1. Sample Collection Date: July 7-11, 1972
2. Reported as No./m^2

July, 1972

BENTHOS SAMPLES	Sta. 10	Sta. 11	Sta. 12	Sta. 13	Sta. 14	Sta. 15	Sta. 16	Sta. 17	Sta. 18
COELENTERATA									
Hydra sp.									
PLATYHELMINTHES									
Planariidae									
ANNELIDA									
Hirudinea									
Glossiphonia complanata					18				
Helobdella stagnalis						18			
Helobdella elongata									
Oligochaeta									
Tubificidae									
Branchiura sowerbyi			18	54					
Limnodrilus cervix				36	36				
L. claparedeanus									
L. claparedeanus-cervix									
L. hoffmeisteri				54	18				
L. maumeensis									
L. udekemianus									
Potamothrix moldaviensis		18	36		72		36		
P. vejdovskyi					18				
Immature		1014	1032	2226	3131	543	615		
Naididae									
Nais sp.									
Naidium sp.			18	36					
Pristina sp.									
Stylaria sp.									
Uncinais uncinata sp.									
ARTHROPODA									
Isopoda									
Asellus sp.									
Amphipoda									
Gammarus fasciatus				91	18				
Hyalella azteca									
Ephemeroptera									
Caenis sp.									
Trichoptera									
Athripsodes sp.									
Oecetis sp.									
Polycentropus sp.									

Notes: 1. Sample Collection Date: July 7-11, 1972
2. Reported as No./m^2

Analysis of Benthos Populations at Locust Point
July, 1972

BENTHOS SPECIES	Sta. 10	Sta. 11	Sta. 12	Sta. 13	Sta. 14	Sta. 15	Sta. 16	Sta. 17	Sta. 18
ARTHROPODA (Cont.)									
Limnephilidae									
Chironomidae									
Chironominae									
Chironomus (Chironomus) sp.						18			
C. (Cryptochironomus) sp.				36	18		18		
Polypedilum sp.				18					
Pseudochironomus sp.									
Tanytarsus sp.			36		91				
Tanypodinae									
Coelotanypus sp.									
Procladius sp.							18		
Orthocladiinae									
Cricotopus sp.									
Psectrocladius sp.									
MOLLUSCA									
Gastropoda									
Amnicola sp.									
Bulimus sp.									
Gyraulus sp.									
Physa sp.									
Pleurocera-Goniobasis sp.									
Valvata sp.									
Pelecypoda									
Unionidae									
Amblema plicata									
Lampsilis ventricosa									
L. radiata									
Leptodea fragilis									
Ligumia recta									
Potamilus alatus									
Quadrula pustulosa									
Sphaeriidae									
Pisidium sp.									
Sphaerium sp.									

Notes: 1. Sample Collection Date: July 7-11. 1972
2. Reported as No./m^2

Analysis of Benthos Samples
August, 1972

BENTHOS SAMPLES	Sta. 1	Sta. 2	Sta. 3	Sta. 4	Sta. 5	Sta. 6	Sta. 7	Sta. 8	Sta. 9
COELENTERATA									
Hydra sp.									
PLATYHELMINTHES									
Planariidae									
ANNELIDA									
Hirudinea									
Glossiphonia complanata			—	—					
Helobdella stagnalis				18					
Helobdella elongata									
Oligochaeta									
Tubificidae									
Branchiura sowerbyi				18					18
Limnodrilus cervix									18
L. claparedeanus				54					
L. claparedeanus-cervix									
L. hoffmeisteri				18					18
L. maumeensis									
L. udekemianus									
Potamothrix moldaviensis			6						18
P. vejdovskyi									
Immature				344				163	796
Naididae									
Nais sp.									
Naidium sp.									
Pristina sp.									
Stylaria sp.									
Uncinais uncinata sp.									
ARTHROPODA									
Isopoda									
Asellus sp.									
Amphipoda									
Gammarus fasciatus				18					
Hyalella azteca									
Ephemeroptera									
Caenis sp.									
Trichoptera									
Athripsodes sp.									
Oecetis sp.									
Polycentropus sp.									

Notes: 1. Sample collection date: 31 July - 1 August, 1972
2. Reported as No./m^2

Analysis of Benthos Populations at Locust Point
August, 1972

BENTHOS SPECIES	Sta. 1	Sta. 2	Sta. 3	Sta. 4	Sta. 5	Sta. 6	Sta. 7	Sta. 8	Sta. 9
ARTHROPODA (Cont.)									
Limnephilidae									
Chironomidae									
Chironominae									
Chironomus (Chironomus) sp.									
C. (Cryptochironomus) sp.									
Polypedilum sp.				18	18				
Pseudochironomus sp.									
Tanytarsus sp.									
Tanypodinae									
Coelotanypus sp.									
Procladius sp.									
Orthocladiinae									
Cricotopus sp.									
Psectrocladius sp.									
MOLLUSCA									
Gastropoda									
Amnicola sp.									
Bulimus sp.									
Gyraulus sp.									
Physa sp.									
Pleurocera-Goniobasis sp.									
Valvata sp.									
Pelecypoda									
Unicnidae									
Amblema plicata									
Lampsilis ventricosa									
L. radiata									
Leptodea fragilis								18	
Ligumia recta									
Potamilus alatus									
Quadrula pustulosa									
Sphaeriidae									
Pisidium sp.									
Sphaerium sp.									

Notes: 1. Sample collection date: 31 July - 1 August, 1972
2. Reported as No./m^2

Analysis of Benthos Populations
August, 1972

BENTHOS SAMPLES	Sta. 10	Sta. 11	Sta. 12	Sta. 13	Sta. 14	Sta. 15	Sta. 16	Sta. 17	Sta. 18
COELENTERATA									
Hydra sp.									
PLATYHELMINTHES									
Planariidae									
ANNELIDA									
Hirudinea									
Glossiphonia complanata									
Helobdella stagnalis			18						
Helobdella elongata									
Oligochaeta									
Tubificidae									
Branchiura sowerbyi				18					
Limnodrilus cervix									
L. claparedeanus									
L. claparedeanus-cervix									
L. hoffmeisteri									
L. maumeensis									
L. udekemianus									
Potamothrix moldaviensis									
P. vejdovskyi									
Immature		9	36	109		32			
Naididae									
Nais sp.									
Naidium sp.									
Pristina sp.									
Stylaria sp.									
Uncinais uncinata sp.									
ARTHROPODA									
Isopoda									
Asellus sp.									
Amphipoda									
Gammarus fasciatus									
Hyalella azteca									
Ephemeroptera									
Caenis sp.									
Trichoptera									
Athripsodes sp.									
Oecetis sp.									
Polycentropus sp.									

Notes: 1. Sample Collection Date: 21 July - 1 August, 1972
2. Reported as No./m^2

Analysis of Benthos Populations at Locust Point
August, 1972

BENTHOS SPECIES	Sta. 10	Sta. 11	Sta. 12	Sta. 13	Sta. 14	Sta. 15	Sta. 16	Sta. 17	Sta. 18
ARTHROPODA (Cont.)									
Limnephilidae									
Chironomidae									
Chironominae									
Chironomus (Chironomus) sp.						36			
C. (Cryptochironomus) sp.									
Polypedilum sp.		27		18					
Pseudochironomus sp.									
Tanytarsus sp.									
Tanypodinae									
Coelotanupus sp.									
Procladius sp.						1			
Orthocladiinae									
Cricotopus sp.									
Psectrocladius sp.									
MOLLUSCA									
Gastropoda									
Amnicola sp.									
Bulimus sp.									
Gyraulus sp.									
Physa sp.									
Pleurocera-Goniobasis sp.									
Valvata sp.									
Pelecypoda									
Unionidae									
Amblema plicata									
Lampsilis ventricosa									
L. radiata									
Leptodea fragilis									
Ligumia recta									
Potamilus alatus									
Quadrula pustulosa									
Sphaeriidae									
Pisidium sp.									
Sphaerium sp.									

Notes: 1. Sample Collection Date: 21 July - 1 August, 1972
2. Reported as No./m^2

Analysis of Benthos Populations at Locust Point
September, 1972

BENTHOS SAMPLES	Sta. 5	Sta. 6								
COELENTERATA										
Hydra sp.										
PLATYHELMINTHES										
Planariidae										
ANNELIDA										
Hirudinea										
Glossiphonia complanata										
Helobdella stagnalis										
Helobdella elongata										
Oligochaeta										
Tubificidae										
Branchiura sowerbyi										
Limnodrilus cervix										
L. claparedeanus										
L. claparedeanus-cervix										
L. hoffmeisteri										
L. maumeensis										
L. udekemianus										
Potamothrix moldaviensis										
P. vejdovskyi										
Immature	18									
Naididae										
Nais sp.										
Naidium sp.										
Pristina sp.										
Stylaria sp.										
Uncinais uncinata sp.										
ARTHROPODA										
Isopoda										
Asellus sp.										
Amphipoda										
Gammarus fasciatus										
Hyalella azteca										
Ephemeroptera										
Caenis sp.										
Trichoptera										
Athripsodes sp.										
Oecetis sp.										
Polycentropus sp.										

Notes:
1. Sample collection date: September 1, 1972
2. Reported as No./m^2
3. Only stations 5 and 6 sampled

Analysis of Benthos Populations at Locust Point
September, 1972

BENTHOS SPECIES	Sta. 5	Sta. 6
ARTHROPODA (Cont.)		
Limnephilidae		
Chironomidae		
Chironominae		
Chironomus (Chironomus) sp.		
C. (Cryptochironomus) sp.		
Polypedilum sp.		
Pseudochironomus sp.		
Tanytarsus sp.	36	
Tanypodinae		
Coelotanypus sp.		
Procladius sp.		
Orthocladiinae		
Cricotopus sp.		
Psectrocladius sp.		
MOLLUSCA		
Gastropoda		
Amnicola sp.		
Bulimus sp.		
Gyraulus sp.		
Physa sp.		
Pleurocera-Goniobasis sp.		
Valvata sp.		
Pelecypoda		
Unionidae		
Amblema plicata		
Lampsilis ventricosa		
L. radiata		
Leptodea fragilis		
Ligumia recta		
Potamilus alatus		
Quadrula pustulosa		
Sphaeriidae		
Pisidium sp.		
Sphaerium sp.		

Note: 1. Sample collection date: September 1, 1972
2. Reported as No./m^2
3. Only stations 5 and 6 sampled

October, 1972

BENTHOS SAMPLES	Sta. 1	Sta. 2	Sta. 3	Sta. 4	Sta. 5	Sta. 6	Sta. 7	Sta. 8	Sta. 9
COELENTERATA									
Hydra sp.						36	18	54	54
PLATYHELMINTHES									
Planariidae									
ANNELIDA									
Hirudinea									
Glossiphonia complanata									
Helobdella stagnalis									
Helobdella elongata									
Oligochaeta									
Tubificidae									
Branchiura sowerbyi							308	36	
Limnodrilus cervix									
L. claparedeanus									
L. claparedeanus-cervix									18
L. hoffmeisteri									
L. mawnensis									
L. udekemianus									
Potamothrix moldaviensis						18	109		
P. vejdovskyi									
Immature						181	2534	760	1556
Naididae									
Nais sp.								272	145
Naidium sp.							18	36	54
Pristina sp.									
Stylaria sp.									72
Uncinais uncinata sp.									
ARTHROPODA									
Isopoda									
Asellus sp.									
Amphipoda									
Gammarus fasciatus						18		18	54
Hyalella azteca									
Ephemeroptera									
Caenis sp.									
Trichoptera									
Athripsodes sp.									
Oecetis sp.									
Polycentropus sp.									

Notes: 1. Sample collection date: October 6, 1972
2. Reported as No./m^2

Analysis of Benthos Populations at Locust Point
October, 1972

BENTHOS SPECIES	Sta. 1	Sta. 2	Sta. 3	Sta. 4	Sta. 5	Sta. 6	Sta. 7	Sta. 8	Sta. 9
ARTHROPODA (Cont.)									
Limnephilidae									
Chironomidae									
Chironominae									
Chironomus (Chironomus) sp.					54	199	163	2334	1648
C. (Cryptochironomus) sp.						18	163	18	145
Polypedilum sp.									
Pseudochironomus sp.									
Tanytarsus sp.						36		362	109
Tanypodinae									
Coelotanypus sp.									18
Procladius sp.							18	91	18
Orthocladiinae									
Cricotopus sp.									
Psectrocladius sp.									
MOLLUSCA									
Gastropoda									
Amnicola sp.									
Bulimus sp.									
Gyraulus sp.									
Physa sp.									
Pleurocera-Goniobasis sp.									
Valvata sp.									
Pelecypoda									
Unionidae									
Amblema plicata									
Lampsilis ventricosa									
L. radiata									
Leptodea fragilis									
Ligumia recta									
Potamilus alatus									
Quadrula pustulosa									
Sphaeriidae									
Pisidium sp.									
Sphaerium sp.									

Note: 1. Sample Collection Date: October 6, 1972
2. Reported as No./m^2

Analysis of Benthos Populations at Locust Point
October, 1972

BENTHOS SAMPLES	Sta. 10	Sta. 11	Sta. 12	Sta. 13	Sta. 14	Sta. 15	Sta. 16	Sta. 17	Sta. 18
COELENTERATA									
Hydra sp.			91		18				
PLATYHELMINTHES									
Planariidae									
ANNELIDA									
Hirudinea									
Glossiphonia complanata									
Helobdella stagnalis									
Helobdella elongata									
Oligochaeta									
Tubificidae									
Branchiura sowerbyi					199				
Limnodrilus cervix									
L. claparedeanus					18				
L. claparedeanus-cervix									
L. hoffmeisteri									
L. maumeensis									
L. udekemianus									
Potamothrix moldaviensis									
P. vejdovskyi				18					
Immature	18		887	326	1647				
Naididae									
Nais sp.									
Naidium sp.			18	54	18				
Pristina sp.									
Stylaria sp.									
Uncinais uncinata sp.	127		18						
ARTHROPODA									
Isopoda									
Asellus sp.									
Amphipoda									
Gammarus fasciatus	18								
Hyalella azteca									
Ephemeroptera									
Caenis sp.			18						
Trichoptera									
Athripsodes sp.									
Oecetis sp.									
Polycentropus sp.									

Notes: 1. Sample collection date: October 6, 1972
2. Reported as No./m^2

BENTHOS SPECIES	Sta. 10	Sta. 11	Sta. 12	Sta. 13	Sta. 14	Sta. 15	Sta. 16	Sta. 17	Sta. 18
ARTHROPODA (Cont.)									
Limnephilidae									
Chironomidae									
Chironominae									
Chironomus (Chironomus) sp.	36		72	91	471				
C. (Cryptochironomus) sp.			127	36	91				
Polypedilum sp.			18		18				
Pseudochironomus sp.									
Tanytarsus sp.				72					
Tanypodinae									
Coelotanypus sp.					18				
Procladius sp.					72				
Orthocladiinae									
Cricotopus sp.									
Psectrocladius sp.									
MOLLUSCA									
Gastropoda									
Amnicola sp.									
Bulimus sp.									
Gyraulus sp.									
Physa sp.									
Pleurocera-Goniobasis sp.									
Valvata sp.									
Pelecypoda									
Unionidae									
Amblema plicata									
Lampsilis ventricosa									
L. radiata									
Leptodea fragilis									
Ligumia recta									
Potarilus alatus									
Quadrula pustulosa									
Sphaeriidae									
Pisidium sp.									
Sphaerium sp.									

Notes: 1. Sample collection date: October 6, 1972
2. Reported as No./m^2

Analysis of Benthos Populations at Locust Point
November, 1972

BENTHOS SAMPLES	Sta. 5	Sta. 6	Sta. 7	Sta. 8					
COELENTERATA									
Hydra sp.									
PLATYHELMINTHES									
Planariidae									
ANNELIDA									
Hirudinea									
Glossiphonia complanata									
Helobdella stagnalis				18					
Helobdella elongata									
Oligochaeta									
Tubificidae									
Branchiura sowerbyi		18	18						
Limnodrilus cervix									
L. claparedeanus									
L. claparedeanus-cervix									
L. hoffmeisteri									
L. maumeensis									
L. udekemianus									
Potamothrix moldaviensis									
P. vejdovskyi									
Immature	127	18	996	561					
Naididae									
Nais sp.									
Naidium sp.	18								
Pristina sp.									
Stylaria sp.									
Uncinais uncinata sp.									
ARTHROPODA									
Isopoda									
Asellus sp.									
Amphipoda									
Gammarus fasciatus	36	18	18	18					
Hyalella azteca									
Ephemeroptera									
Caenis sp.									
Trichoptera									
Athripsodes sp.									
Oecetis sp.									
Polycentropus sp.									

Note: 1. Sample collection date: November 18, 1972
2. Reported as No./m^2
3. Only stations 5, 6, 7, and 8 sampled

BENTHOS SPECIES	Sta. 5	Sta. 6	Sta. 7	Sta. 8					
ARTHROPODA (Cont.)									
Limnephilidae									
Chironomidae									
Chironominae									
Chironomus (Chironomus) sp.									
C. (Cryptochironomus) sp.	109		54						
Polypedilum sp.		18							
Pseudochironomus sp.									
Tanytarsus sp.									
Tanypodinae									
Coelotanypus sp.									
Procladius sp.									
Orthocladiinae									
Cricotopus sp.									
Psectrocladius sp.									
MOLLUSCA									
Gastropoda									
Amnicola sp.									
Bulimus sp.									
Gyraulus sp.									
Physa sp.									
Pleurocera-Goniobasis sp.									
Valvata sp.									
Pelecypoda									
Unionidae									
Amblema plicata									
Lampsilis ventricosa									
L. radiata									
Leptodea fragilis									
Ligumia recta				18					
Potamilus alatus									
Quadrula pustulosa									
Sphaeriidae									
Pisidium sp.			18						
Sphaerium sp.									

Notes: 1. Sample collection date: November 18, 1972
2. Reported as No./m^2
3. Only stations 5, 6, 7, and 8 sampled

APPENDIX II

ANALYSIS OF MACROBENTHOS SAMPLES
1973

ANALYSIS OF BENTHOS POPULATIONS AT LOCUST POINT
MAY, 1973

BENTHOS SAMPLES	Sta. 1	Sta. 2	Sta. 3	Sta. 4	Sta. 5	Sta. 6	Sta. 7	Sta. 8	Sta. 9
COELENTERATA									
Hydra sp.			109					18	18
PLATYHELMINTHES									
Planariidae									
ANNELIDA									
Hirudinea									
Glossiphonia complanata									
Helobdella stagnalis									
Helobdella elongata							18		
Nephelopsis pseudoobtusa									
Oligochaeta, Immature			543			181	3403	1032	923
Tubificidae							72	36	
Branchiura sowerbyi									
Limnodrilus cervix						36			
L. claparedeanus									
L. claparedeanus-cervix								54	
L. hoffmeisteri									
L. maumeensis									
L. udekemianus			36			163	163	72	91
Potamothrix moldaviensis							109	91	
P. vejdovskyi									
Naididae									
Nais sp.									
Naidium sp.									
Pristina sp.									
Stylaria sp.								18	109
Uncinais uncinata sp.									
ARTHROPODA									
Isopoda									
Asellus sp.									
Amphipoda									
Gammarus fasciatus			72			18	18		18
Hyalella azteca									
Ephemeroptera									
Caenis sp.						18			
Trichoptera									
Athripsodes sp.									
Oecetis sp.									
Polycentropus sp.									

Notes:

1. Sample collection date: 5-25-73
2. Collection method: Ponar Grab
3. Reported as number of individuals per square meter

ANALYSIS OF BENTHOS POPULATIONS AT LOCUST POINT
MAY, 1973

BENTHOS SPECIES	Sta. 1	Sta. 2	Sta. 3	Sta. 4	Sta. 5	Sta. 6	Sta. 7	Sta. 8	Sta. 9
ARTHROPODA (Cont.)									
Limnephilidae									
Chironomidae									
Chironominae									
Chironomus (Chironomus) sp.									
C. (Cryptochironomus) sp.			18					54	91
Polypedilum sp.						18	290	54	
Pseudochironomus sp.									18
Tanytarsus sp.			36				326	54	54
Tanypodinae									
Coelotanypus sp.									
Procladius sp.			36				18		
Orthocladiinae									
Cricotopus sp.									
Psectrocladius sp.									
MOLLUSCA									
Gastropoda									
Amnicola sp.									
Bulimus sp.									
Gyraulus sp.									
Physa sp.									
Pleurocera-Goniobasis sp.		18							
Valvata sp.									
Pelecypoda									
Unionidae									
Amblema plicata									
Lampsilis ventricosa									
L. radiata									
Leptodea fragilis									
Ligumia recta									
Potamilus alatus									
Quadrula pustulosa									
Sphaeriidae									
Pisidium sp.							18		
Sphaerium sp.			18						
Total	0	18	886		0	434	4435	1484	1321

Notes:

1. Sample collection date: 5-25-73
2. Collection method: Ponar Grab
3. Reported as number of individuals per square meter

ANALYSIS OF BENTHOS POPULATIONS AT LOCUST POINT
MAY, 1973

BENTHOS SAMPLES	Sta. 10	Sta. 11	Sta. 12	Sta. 13	Sta. 14	Sta. 15	Sta. 16	Sta. 17	Sta. 18
COELENTERATA									
Hydra sp.	18				18				
PLATYHELMINTHES									
Planariidae									
ANNELIDA									
Hirudinea									
Glossiphonia complanata									
Helobdella stagnalis									
Helobdella elongata									
Oligochaeta, Immatures	326	18	91	145	217		72		380
Tubificidae									
Branchyura sowerbyi									
Limnodrilus cervix									
L. claparedeanus									
L. claparedeanus-cervix									36
L. hoffmeisteri									
L. maumeensis									
L. udekemianus									
Potamothrix moldaviensis		54		18	36				18
P. vejdovskyi							18		
Naididae									
Nais sp.									
Naidium sp.									
Pristina sp.									
Stylaria sp.									
Uncinais uncinata sp.									
ARTHROPODA									
Isopoda									
Asellus sp.									
Amphipoda									
Gammarus fasciatus				109		36			
Hyalella azteca									
Ephemeroptera									
Caenis sp.				18					
Trichoptera									
Athripsodes sp.									
Oecetis sp.									
Polycentropus sp.									

Notes:

1. Sample collection date: 5-25-73
2. Collection method: Ponar Grab
3. Reported as number of individuals per square meter

ANALYSIS OF BENTHOS POPULATIONS AT LOCUST POINT
MAY, 1973

BENTHOS SPECIES	Sta. 10	Sta. 11	Sta. 12	Sta. 13	Sta. 14	Sta. 15	Sta. 16	Sta. 17	Sta. 18
ARTHROPODA (Cont.)									
Limnephilidae									
Chironomidae									
Chironominae									
Chironomus (Chironomus) sp.									
C. (Cryptochironomus) sp.		54		18	18	18			163
Polypedilum sp.				18	72				36
Pseudochironomus sp.									
Tanytarsus sp.			9	18					18
Tanypodinae									
Coelotanypus sp.									
Procladius sp.	18								
Orthocladiinae									
Cricotopus sp.									
Psectrocladius sp.									
MOLLUSCA									
Gastropoda									
Amnicola sp.									
Bulimus sp.									
Gyraulus sp.									
Physa sp.									
Pleurocera-Goniobasis sp.									
Valvata sp.									
Pelecypoda									
Unionidae									
Amblema plicata									
Lampsilis ventricosa									
L. radiata									
Leptodea fragilis									
Ligumia recta									
Potamilus alatus									
Quadrula pustulosa									
Sphaeriidae									
Pisidium sp.									
Sphaerium sp.									
Total	362	126	100	344	361	144	90		652

Notes:

1. Sample collection date: 5-25-73
2. Collection method: Ponar Grab
3. Reported as number of individuals per square meter

ANALYSIS OF BENTHOS POPULATIONS AT LOCUST POINT

MAY, 1973

BENTHOS SAMPLES	Sta. 19	Sta. 20							
COELENTERATA									
Hydra sp.									
PLATYHELMINTHES									
Planariidae									
ANNELIDA									
Hirudinea									
Glossiphonia complanata									
Helobdella stagnalis									
Helobdella elongata									
Oligochaeta, Immatures									
Tubificidae									
Branchyura sowerbyi									
Limnodrilus cervix									
L. claparedeanus									
L. claparedeanus-cervix									
L. hoffmeisteri									
L. maumeensis									
L. udekemianus									
Potamothrix moldaviensis									
P. vejdovskyi									
Naididae									
Nais sp.									
Naidium sp.									
Pristina sp.									
Stylaria sp.									
Uncinais uncinata sp.									
ARTHROPODA									
Isopoda									
Asellus sp.									
Amphipoda									
Gammarus fasciatus									
Hyalella azteca									
Ephemeroptera									
Caenis sp.									
Trichoptera									
Athripsodes sp.									
Oecetis sp.									
Polycentropus sp.									

Notes:

1. Sample collection date: 5-25-73
2. Collection method: Ponar Grab
3. Reported as number of individuals per square meter

ANALYSIS OF BENTHOS POPULATIONS AT LOCUST POINT

MAY, 1973

BENTHOS SPECIES	Sta. 19	Sta. 20
ARTHROPODA (Cont.)		
Limnephilidae		
Chironomidae		
Chironominae		
Chironomus (Chironomus) sp.		
C. (Cryptochironomus) sp.		
Polypedilum sp.		
Pseudochironomus sp.		
Tanytarsus sp.		
Tanypodinae		
Coelotanypus sp.		
Procladius sp.		
Orthocladiinae		
Cricotopus sp.		
Psectrocladius sp.		
MOLLUSCA		
Gastropoda		
Amnicola sp.		
Bulimus sp.		
Gyraulus sp.		
Physa sp.		
Pleurocera-Goniobasis sp.		
Valvata sp.		
Pelecypoda		
Unionidae		
Amblema plicata		
Lampsilis ventricosa		
L. radiata		
Leptodea fragilis		
Ligumia recta		
Potamilus alatus		
Quadrula pustulosa		
Sphaeriidae		
Pisidium sp.		
Sphaerium sp.		
Total		

Notes:

1. Sample collection date: 5-25-73
2. Collection method: Ponar Grab
3. Reported as number of individuals per square meter

ANALYSIS OF BENTHOS POPULATIONS AT LOCUST POINT
JUNE and JULY, 1973

BENTHOS SAMPLES	Sta. 1	Sta. 2	Sta. 3	Sta. 4	Sta. 5	Sta. 6	Sta. 7	Sta. 8	Sta. 9
COELENTERATA									
Hydra sp.									
PLATYHELMINTHES									
Planariidae									
ANNELIDA									
Hirudinea									
Glossiphonia complanata									
Helobdella stagnalis									
Helobdella elongata									
Oligochaeta, Immatures			2842	1321			815	1177	434
Tubificidae									
Branchyura sowerbyi									
Limnodrilus cervix	54		109				18		
L. claparedeanus									
L. claparedeanus-cervix									
L. hoffmeisteri							36	54	
L. maumeensis									
L. udekemianus									
Potamothrix moldaviensis	18		706	217			18		290
P. vejdovskyi			398	36			72	36	
Naididae									
Nais sp.									
Naidium sp.									
Pristina sp.									
Stylaria sp.									
Uncinais uncinata sp.									
ARTHROPODA									
Isopoda									
Asellus sp.									
Amphipoda									
Gammarus fasciatus					18				
Hyalella azteca									
Ephemeroptera									
Caenis sp.			36						
Trichoptera									
Athripsodes sp.									
Oecetis sp.									
Polycentropus sp.									

Notes:

1. Sample collection date: 6-27-73 and 7-2-73
2. Collection method: Ponar Grab
3. Reported as number of individuals per square meter

ANALYSIS OF BENTHOS POPULATIONS AT LOCUST POINT
JUNE and JULY, 1973

BENTHOS SPECIES	Sta. 1	Sta. 2	Sta. 3	Sta. 4	Sta. 5	Sta. 6	Sta. 7	Sta. 8	Sta. 9
ARTHROPODA (Cont.)									
Limnephilidae									
Chironomidae									
Chironominae									
Chironomus (Chironomus) sp.	91		36				235	36	18
C. (Cryptochironomus) sp.	18			36			18		36
Polypedilum sp.	18		18						
Pseudochironomus sp.									
Tanytarsus sp.			18					217	54
Tanypodinae									
Coelotanypus sp.									
Procladius sp.			18	36				72	
Orthocladiinae									
Cricotopus sp.									
Psectrocladius sp.									
MOLLUSCA									
Gastropoda									
Amnicola sp.									
Bulimus sp.									
Gyraulus sp.									
Physa sp.									
Pleurocera-Goniobasis sp.									
Valvata sp.									
Pelecypoda									
Unionidae									
Amblema plicata									
Lampsilis ventricosa									
L. radiata									
Leptodea fragilis									
Ligumia recta									
Potamilus alatus									
Quadrula pustulosa									
Sphaeriidae									
Pisidium sp.									
Sphaerium sp.	18								
Total	217	0	4181	1646	18		1212	1592	832

Notes:

1. Sample collection date: 6-27-73 and 7-2-73
2. Collection method: Ponar Grab
3. Reported as number of individuals per square meter

ANALYSIS OF BENTHOS POPULATIONS AT LOCUST POINT
JUNE and JULY, 1973

BENTHOS SAMPLES	Sta. 10	Sta. 11	Sta. 12	Sta. 13	Sta. 14	Sta. 15	Sta. 16	Sta. 17	Sta. 18
COELENTERATA									
Hydra sp.									
PLATYHELMINTHES									
Planariidae									
ANNELIDA									
Hirudinea									
Glossiphonia complanata									
Helobdella stagnalis									
Helobdella elongata									
Oligochaeta, Immatures		18	181	561	561	109			380
Tubificidae									
Branchyura sowerbyi						36			
Limnodrilus cervix						18			
L. claparedeanus									
L. claparedeanus-cervix									
L. hoffmeisteri									
L. mawneensis									
L. udekemianus									
Potamothrix moldaviensis			72		18				18
P. vejdovskyi						308			
Naididae									
Nais sp.									
Naidium sp.									
Pristina sp.									
Stylaria sp.									
Uncinais uncinata sp.									
ARTHROPODA									
Isopoda									
Asellus sp.									
Amphipoda									
Gammarus fasciatus									
Hyalella azteca									
Ephemeroptera									
Caenis sp.									
Trichoptera									
Athripsodes sp.									
Oecetis sp.									
Polycentropus sp.									

Notes:

1. Sample collection date: 6-27-73 and 7-2-73
2. Collection method: Ponar Grab
3. Reported as number of individuals per square meter

ANALYSIS OF BENTHOS POPULATIONS AT LOCUST POINT
JUNE and JULY, 1973

BENTHOS SPECIES	Sta. 10	Sta. 11	Sta. 12	Sta. 13	Sta. 14	Sta. 15	Sta. 16	Sta. 17	Sta. 18
ARTHROPODA (Cont.)									
Limnephilidae									
Chironomidae									
Chironominae									
Chironomus (Chironomus) sp.			380	199	54	72	109		91
C. (Cryptochironomus) sp.			18						
Polypedilum sp.						36			
Pseudochironomus sp.									
Tanytarsus sp.									
Tanypodinae									
Coelotanypus sp.						72			36
Procladius sp.									
Orthocladiinae									
Cricotopus sp.									
Psectrocladius sp.									
MOLLUSCA									
Gastropoda									
Amnicola sp.									
Bulimus sp.									
Gyraulus sp.									
Physa sp.									
Pleurocera-Goniobasis sp.									
Valvata sp.									
Pelecypoda									
Unionidae									
Amblema plicata									
Lampsilis ventricosa									
L. radiata									
Leptodea fragilis									
Ligumia recta									
Potamilus alatus									
Quadrula pustulosa									
Sphaeriidae									
Pisidium sp.									
Sphaerium sp.									
Total	0	18	651	761	633	651	109		525

Notes:

1. Sample collection date: 6-27-73 and 7-2-73
2. Collection method: Ponar Grab
3. Reported as number of individuals per square meter

ANALYSIS OF BENTHOS POPULATIONS AT LOCUST POINT
JUNE and JULY' 1973

BENTHOS SAMPLES	Sta. 19	Sta. 20							
COELENTERATA									
Hydra sp.									
PLATYHELMINTHES									
Planariidae									
ANNELIDA									
Hirudinea									
Glossiphonia complanata									
Helobdella stagnalis									
Helobdella elongata									
Oligochaeta, Immatures									
Tubificidae									
Branchyura sowerbyi									
Limnodrilus cervix									
L. claparedeanus									
L. claparedeanus-cervix									
L. hoffmeisteri									
L. maumeensis									
L. udekemianus									
Potamothrix moldaviensis									
P. vejdovskyi									
Naididae									
Nais sp.									
Naidium sp.									
Pristina sp.									
Stylaria sp.									
Uncinais uncinata sp.									
ARTHROPODA									
Isopoda									
Asellus sp.									
Amphipoda									
Gammarus fasciatus									
Hyalella azteca									
Ephemeroptera									
Caenis sp.									
Trichoptera									
Athripsodes sp.									
Oecetis sp.									
Polycentropus sp.									

Notes:

1. Sample collection date: 6-27-73 and 7-2-73
2. Collection method: Ponar Grab
3. Reported as number of individuals per square meter

ANALYSIS OF BENTHOS POPULATIONS AT LOCUST POINT
JUNE and JULY' 1973

BENTHOS SPECIES	Sta. 19	Sta. 20							
ARTHROPODA (Cont.)									
Limnephilidae									
Chironomidae									
Chironominae									
Chironomus (Chironomus) sp.									
C. (Cryptochironomus) sp.									
Polypedilum sp.									
Pseudochironomus sp.									
Tanytarsus sp.									
Tanypodinae									
Coelotanypus sp.									
Procladius sp.									
Orthocladiinae									
Cricotopus sp.									
Psectrocladius sp.									
MOLLUSCA									
Gastropoda									
Amnicola sp.									
Bulimus sp.									
Gyraulus sp.									
Physa sp.									
Pleurocera-Goniobasis sp.									
Valvata sp.									
Pelecypoda									
Unionidae									
Amblema plicata									
Lampsilis ventricosa									
L. radiata									
Leptodea fragilis									
Ligumia recta									
Potamilus alatus									
Quadrula pustulosa									
Sphaeriidae									
Pisidium sp.									
Sphaerium sp.									
Total	0	0							

Notes:

1. Sample collection date: 6-27-73 and 7-2-73
2. Collection method: Ponar Grab
3. Reported as number of individuals per square meter

ANALYSIS OF BENTHOS POPULATIONS AT LOCUST POINT
JULY and AUGUST, 1973

BENTHOS SAMPLES	Sta. 1	Sta. 2	Sta. 3	Sta. 4	Sta. 5	Sta. 6	Sta. 7	Sta. 8	Sta. 9
COELENTERATA									
Hydra sp.									
PLATYHELMINTHES									
Planariidae									
ANNELIDA									
Hirudinea									
Glossiphonia complanata									
Helobdella stagnalis	18								
Helobdella elongata									
Oligochaeta, Immatures	18		1104	1177			2860	489	344
Tubificidae									
Branchyura sowerbyi			18	72			72		
Limnodrilus cervix			36	18					
L. claparedeanus									
L. claparedeanus-cervix									
L. hoffmeisteri									
L. maumeensis									
L. udekemianus									
Potamothrix moldaviensis			127	54			543		36
P. vejdovskyi			18	18			18		
Naididae									
Nais sp.									
Naidium sp.									
Pristina sp.									
Stylaria sp.									
Uncinais uncinata sp.									
ARTHROPODA									
Isopoda									
Asellus sp.									
Amphipoda									
Gammarus fasciatus						18			
Hyalella azteca									
Ephemeroptera									
Caenis sp.									
Trichoptera									
Athriosodes sp.									
Oecetis sp.									
Polycentropus sp.									

Notes:

1. Sample collection date: 7-25-73 and 8-1-73
2. Collection method: Ponar Grab
3. Reported as number of individuals per square meter

ANALYSIS OF BENTHOS POPULATIONS AT LOCUST POINT
JULY and AUGUST, 1973

BENTHOS SPECIES	Sta. 1	Sta. 2	Sta. 3	Sta. 4	Sta. 5	Sta. 6	Sta. 7	Sta. 8	Sta. 9
ARTHROPODA (Cont.)									
Limnephilidae									
Chironomidae									
Chironominae									
Chironomus (Chironomus) sp.			127	54			4453	72	525
C. (Cryptochironomus) sp.						18		18	
Polypedilum sp.									
Pseudochironomus sp.				54					18
Tanytarsus sp.									
Tanypodinae									
Coelotanypus sp.			18	36			36		
Procladius sp.									
Orthocladiinae									
Cricotopus sp.									
Psectrocladius sp.									
MOLLUSCA									
Gastropoda									
Amnicola sp.									
Bulimus sp.									
Gyraulus sp.									
Physa sp.									
Pleurocera-Goniobasis sp.									
Valvata sp.									
Pelecypoda									
Unionidae									
Amblema plicata									
Lampsilis ventricosa								18	
L. radiata									
Leptodea fragilis									
Ligumia recta									
Potamilus alatus									
Quadrula pustulosa									
Sphaeriidae									
Pisidium sp.									
Sphaerium sp.				18					
Total	36	0	1447	1519	0	36	8000	597	923

Notes:

1. Sample collection date: 7-25-73 and 8-1-73
2. Collection method: Ponar Grab
3. Reported as number of individuals per square meter

ANALYSIS OF BENTHOS POPULATIONS AT LOCUST POINT
JULY and AUGUST, 1973

BENTHOS SAMPLES	Sta. 10	Sta. 11	Sta. 12	Sta. 13	Sta. 14	Sta. 15	Sta. 16	Sta. 17	Sta. 18
COELENTERATA									
Hydra sp.									
PLATYHELMINTHES									
Planariidae									
ANNELIDA									
Hirudinea									
Glossiphonia complanata									
Helobdella stagnalis									
Helobdella elongata									
Oligochaeta, Immatures			308	163	579	109	36	91	652
Tubificidae									
Branchyura sowerbyi					54				
Limnodrilus cervix					36				
L. claparedeanus			18		36				18
L. claparedeanus-cervix									
L. hoffmeisteri			18		18				18
L. maumeensis									
L. udekemianus									
Potamothrix moldaviensis			109	18		72		72	109
P. vejdovskyi									18
Naididae									
Nais sp.									
Naidium sp.									
Pristina sp.									
Stylaria sp.									
Uncinais uncinata sp.									
ARTHROPODA									
Isopoda									
Asellus sp.									
Amphipoda									
Gammarus fasciatus		36							
Hyalella azteca									
Ephemeroptera									
Caenis sp.									
Trichoptera									
Athripsodes sp.									
Oecetis sp.									
Polycentropus sp.									

Notes:

1. Sample collection date: 7-25-73 and 8-1-73
2. Collection method: Ponar Grab
3. Reported as number of individuals per square meter

ANALYSIS OF BENTHOS POPULATIONS AT LOCUST POINT
JULY and AUGUST, 1973

BENTHOS SPECIES	Sta. 10	Sta. 11	Sta. 12	Sta. 13	Sta. 14	Sta. 15	Sta. 16	Sta. 17	Sta. 18
ARTHROPODA (Cont.)									
Limnephilidae									
Chironomidae									
Chironominae									
Chironomus (Chironomus) sp.			91		36				72
C. (Cryptochironomus) sp.			36					18	
Polypedilum sp.									
Pseudochironomus sp.									
Tanytarsus sp.									
Tanypodinae									
Coelotanypus sp.									
Procladius sp.					18	18			
Orthocladiinae									
Cricotopus sp.									
Psectrocladius sp.									
MOLLUSCA									
Gastropoda									
Amnicola sp.									
Bulimus sp.									
Gyraulus sp.									
Physa sp.									
Pleurocera-Goniobasis sp.									
Valvata sp.									
Pelecypoda									
Unionidae									
Amblema plicata									
Lampsilis ventricosa									
L. radiata									
Leptodea fragilis									
Ligumia recta									
Potamilus alatus									
Quadrula pustulosa									
Sphaeriidae									
Pisidium sp.									
Sphaerium sp.									
Total		36	580	181	777	199	36	182	887

Notes:

1. Sample collection date: 7-25-73 and 8-1-73
2. Collection method: Ponar Grab
3. Reported as number of individuals per square meter

ANALYSIS OF BENTHOS POPULATIONS AT LOCUST POINT
JULY and AUGUST, 1973

BENTHOS SAMPLES	Sta. 19	Sta. 20								
COELENTERATA										
Hydra sp.										
PLATYHELMINTHES										
Planariidae										
ANNELIDA										
Hirudinea										
Glossiphonia complanata										
Helobdella stagnalis										
Helobdella elongata										
Oligochaeta, Immatures										
Tubificidae										
Branchyura sowerbyi										
Limnodrilus cervix										
L. claparedeanus										
L. claparedeanus-cervix										
L. hoffmeisteri	18									
L. maumeensis										
L. udekemianus										
Potamothrix moldaviensis										
P. vejdovskyi										
Naididae										
Nais sp.										
Naidium sp.										
Pristina sp.										
Stylaria sp.										
Uncinais uncinata sp.										
ARTHROPODA										
Isopoda										
Asellus sp.										
Amphipoda										
Gammarus fasciatus										
Hyalella azteca										
Ephemeroptera										
Caenis sp.										
Trichoptera										
Athripsodes sp.										
Oecetis sp.										
Polycentropus sp.										

Notes:

1. Sample collection date: 7-25-73 and 8-1-73
2. Collection method: Ponar Grab
3. Reported as number of individuals per square meter

ANALYSIS OF BENTHOS POPULATIONS AT LOCUST POINT
JULY and AUGUST, 1973

BENTHOS SPECIES	Sta. 19	Sta. 20							
ARTHROPODA (Cont.)									
Limnephilidae									
Chironomidae									
Chironominae									
Chironomus (Chironomus) sp.									
C. (Cryptochironomus) sp.									
Polypedilum sp.									
Pseudochironomus sp.									
Tanytarsus sp.									
Tanypodinae									
Coelotanypus sp.									
Procladius sp.									
Orthocladiinae									
Cricotopus sp.									
Psectrocladius sp.									
MOLLUSCA									
Gastropoda									
Amnicola sp.									
Bulimus sp.									
Gyraulus sp.									
Physa sp.									
Pleurocera-Goniobasis sp.									
Valvata sp.									
Pelecypoda									
Unionidae									
Amblema plicata									
Lampsilis ventricosa									
L. radiata									
Leptodea fragilis									
Ligumia recta									
Potamilus alatus									
Quadrula pustulosa									
Sphaeriidae									
Pisidium sp.									
Sphaerium sp.									
Total	18	0							

Notes:

1. Sample collection date: 7-25-73 and 8-1-73
2. Collection method: Ponar Grab
3. Reported as number of individuals per square meter

ANALYSIS OF BENTHOS POPULATIONS AT LOCUST POINT
AUGUST, 1973

BENTHOS SAMPLES	Sta. 1	Sta. 2	Sta. 3	Sta. 4	Sta. 5	Sta. 6	Sta. 7	Sta. 8	Sta. 9
COELENTERATA									
Hydra sp.									
PLATYHELMINTHES									
Planariidae									
ANNELIDA									
Hirudinea									
Glossiphonia complanata									
Helobdella stagnalis									
Helobdella elongata									
Oligochaeta, Immatures		127		1629				18	1520
Tubificidae									
Branchyura sowerbyi		18		18					
Limnodrilus cervix		18		18					
L. claparedeanus									
L. claparedeanus-cervix									
L. hoffmeisteri									
L. maumeensis									
L. udekemianus									
Potamothrix moldaviensis				36					18
P. vejdovskyi									
Naididae									
Nais sp.									
Naidium sp.									
Pristina sp.				18					
Stylaria sp.									
Uncinais uncinata sp.									
ARTHROPODA									
Isopoda									
Asellus sp.									
Amphipoda									
Gammarus fasciatus					54				
Hyalella azteca									
Ephemeroptera									
Caenis sp.									
Trichoptera									
Athripsodes sp.									
Oecetis sp.									
Polycentropus sp.									

Notes:

1. Sample collection date: 8-23-73
2. Collection method: Ponar Grab
3. Reported as number of individuals per square meter

ANALYSIS OF BENTHOS POPULATIONS AT LOCUST POINT
AUGUST, 1973

BENTHOS SPECIES	Sta. 1	Sta. 2	Sta. 3	Sta. 4	Sta. 5	Sta. 6	Sta. 7	Sta. 8	Sta. 9
ARTHROPODA (Cont.)									
Limnephilidae									
Chironomidae									
Chironominae									
Chironomus (Chironomus) sp.		72		145		18			181
C. (Cryptochironomus) sp.									
Polypedilum sp.									
Pseudochironomus sp.									
Tanytarsus sp.				778					489
Glyptotendipes sp.					18				
Tanypodinae									
Coelotanypus sp.					18				54
Procladius sp.		18							18
Orthocladiinae									
Cricotopus sp.									
Psectrocladius sp.									
MOLLUSCA									
Gastropoda									
Amnicola sp.									
Bulimus sp.									
Gyraulus sp.									
Physa sp.									
Pleurocera-Goniobasis sp.									
Valvata sp.									
Pelecypoda									
Unionidae									
Amblema plicata									
Lampsilis ventricosa									
L. radiata									
Leptodea fragilis									
Ligumia recta									
Potamilus alatus									
Quadrula pustulosa									
Sphaeriidae									
Pisidium sp.									
Sphaerium sp.									
Total		253		2643	91	18		18	2280

Notes:

1. Sample collection date: 8-23-73
2. Collection method: Ponar Grab
3. Reported as number of individuals per square meter

ANALYSIS OF BENTHOS POPULATIONS AT LOCUST POINT
AUGUST, 1973

BENTHOS SAMPLES	Sta. 10	Sta. 11	Sta. 12	Sta. 13	Sta. 14	Sta. 15	Sta. 16	Sta. 17	Sta. 18
COELENTERATA									
Hydra sp.									
PLATYHELMINTHES									
Planariidae									
ANNELIDA									
Hirudinea									
Glossiphonia complanata									
Helobdella stagnalis									
Helobdella elongata									
Oligochaeta, Immatures	181	199		326			36		
Tubificidae									
Branchyura sowerbyi									
Limnodrilus cervix									
L. claparedeanus				18					
L. claparedeanus-cervix									
L. hoffmeisteri									
L. maumeensis									
L. udekemianus									
Potamothrix moldaviensis		18					18		
P. vejdovskyi									
Naididae									
Nais sp.									
Naidium sp.									
Pristina sp.									
Stylaria sp.									
Uncinais uncinata sp.									
ARTHROPODA									
Isopoda									
Asellus sp.									
Amphipoda									
Gammarus fasciatus		18							
Hyalella azteca									
Ephemeroptera									
Caenis sp.									
Trichoptera									
Athripsodes sp.									
Oecetis sp.									
Polycentropus sp.									

Notes:

1. Sample collection date: 8-23-73
2. Collection method: Ponar Grab
3. Reported as number of individuals per square meter

ANALYSIS OF BENTHOS POPULATIONS AT LOCUST POINT
AUGUST, 1973

BENTHOS SPECIES	Sta. 10	Sta. 11	Sta. 12	Sta. 13	Sta. 14	Sta. 15	Sta. 16	Sta. 17	Sta. 18
ARTHROPODA (Cont.)									
Limnephilidae									
Chironomidae									
Chironominae									
Chironomus (Chironomus) sp.	18			163			18		
C. (Cryptochironomus) sp.		36							
Polypedilum sp.	54	18							
Pseudochironomus sp.									
Tanytarsus sp.									
Tanypodinae									
Coelotanypus sp.									
Procladius sp.									
Orthocladiinae									
Cricotopus sp.									
Psectrocladius sp.									
MOLLUSCA									
Gastropoda									
Amnicola sp.									
Bulimus sp.									
Gyraulus sp.									
Physa sp.									
Pleurocera-Goniobasis sp.									
Valvata sp.									
Pelecypoda									
Unionidae									
Amblema plicata									
Lampsilis ventricosa									
L. radiata									
Leptodea fragilis									
Ligumia recta									
Potamilus alatus									
Quadrula pustulosa									
Sphaeriidae									
Pisidium sp.									
Sphaerium sp.									
Total	253	289		507			72		

Notes:

1. Sample collection date: 8-23-73
2. Collection method: Ponar Grab
3. Reported as number of individuals per square meter

ANALYSIS OF BENTHOS POPULATIONS AT LOCUST POINT
AUGUST, 1973

BENTHOS SAMPLES	Sta. 19	Sta. 20
COELENTERATA		
Hydra sp.		
PLATYHELMINTHES		
Planariidae		
ANNELIDA		
Hirudinea		
Glossiphonia complanata		
Helobdella stagnalis		
Helobdella elongata		
Oligochaeta, Immatures		
Tubificidae		
Branchyura sowerbyi		
Limnodrilus cervix		
L. claparedeanus		
L. claparedeanus-cervix		
L. hoffmeisteri		
L. maumeensis		
L. udekemianus		
Potamothrix moldaviensis		
P. vejdovskyi		
Naididae		
Nais sp.		
Naidium sp.		
Pristina sp.		
Stylaria sp.		
Uncinais uncinata sp.		
ARTHROPODA		
Isopoda		
Asellus sp.		
Amphipoda		
Gammarus fasciatus		
Hyalella azteca		
Ephemeroptera		
Caenis sp.		
Trichoptera		
Athripsodes sp.		
Oecetis sp.		
Polycentropus sp.		

Notes:

1. Sample collection date: 8-23-73
2. Collection method: Ponar Grab
3. Reported as number of individuals per square meter

ANALYSIS OF BENTHOS POPULATIONS AT LOCUST POINT
AUGUST, 1973

BENTHOS SPECIES	Sta. 19	Sta. 20							
ARTHROPODA (Cont.)									
Limnephilidae									
Chironomidae									
Chironominae									
Chironomus (Chironomus) sp.									
C. (Cryptochironomus) sp.									
Polypedilum sp.									
Pseudochironomus sp.									
Tanytarsus sp.									
Tanypodinae									
Coelctanypus sp.									
Procladius sp.									
Orthocladiinae									
Cricotopus sp.									
Psectrocladius sp.									
MOLLUSCA									
Gastropoda									
Amnicola sp.									
Bulimus sp.									
Gyraulus sp.									
Physa sp.									
Pleurocera-Goniobasis sp.									
Valvata sp.									
Pelecypoda									
Unionidae									
Amblema plicata									
Lampsilis ventricosa									
L. radiata									
Leptodea fragilis									
Ligumia recta									
Potamilus alatus									
Quadrula pustulosa									
Sphaeriidae									
Pisidium sp.									
Sphaerium sp.									
Total									

Notes:

1. Sample collection date: 8-23-73
2. Collection method: Ponar Grab
3. Reported as number of individuals per square meter

ANALYSIS OF BENTHOS POPULATIONS AT LOCUST POINT
SEPTEMBER, 1973

BENTHOS SAMPLES	Sta. 1	Sta. 2	Sta. 3	Sta. 4	Sta. 5	Sta. 6	Sta. 7	Sta. 8	Sta. 9
COELENTERATA									
Hydra sp.	18								
PLATYHELMINTHES									
Planariidae									
ANNELIDA									
Hirudinea									
Glossiphonia complanata									
Helobdella stagnalis									
Helobdella elongata									
Oligochaeta, Immatures	145	199	1611	2082		91	91	3005	1937
Tubificidae									
Branchyura sowerbyi				91		18			
Limnodrilus cervix			72	72					181
L. claparedeanus			72	18					91
L. claparedeanus-cervix									
L. hoffmeisteri			36						54
L. maumeensis			72						
L. udekemianus									
Potamothrix moldaviensis			54	18					
P. vejdovskyi									
Naididae									
Nais sp.									
Naidium sp.									
Pristina sp.									
Stylaria sp.									
Uncinais uncinata sp.									
ARTHROPODA									
Isopoda									
Asellus sp.									
Amphipoda									
Gammarus fasciatus					36				
Hyalella azteca									
Ephemeroptera									
Caenis sp.									
Trichoptera									
Athripsodes sp.									
Oecetis sp.									
Polycentropus sp.									

Notes:

1. Sample collection date: 9-19-73 and 9-26-73
2. Collection method: Ponar Grab
3. Reported as number of individuals per square meter

ANALYSIS OF BENTHOS POPULATIONS AT LOCUST POINT
SEPTEMBER, 1973

BENTHOS SPECIES	Sta. 1	Sta. 2	Sta. 3	Sta. 4	Sta. 5	Sta. 6	Sta. 7	Sta. 8	Sta. 9
ARTHROPODA (Cont.)									
Limnephilidae									
Chironomidae									
Chironominae									
Chironomus (Chironomus) sp.	18	54	199	235				36	
C. (Cryptochironomus) sp.						36		18	
Polypedilum sp.	18								
Pseudochironomus sp.	18								
Tanytarsus sp.	36	72	36					36	54
C. (Dicroptendipes)						18			
Tanypodinae									
Coelotanypus sp.			18						
Procladius sp.			18	18					
Orthocladiinae									
Cricotopus sp.									
Psectrocladius sp.									
MOLLUSCA									
Gastropoda									
Amnicola sp.									
Bulimus sp.									
Gyraulus sp.									
Physa sp.									
Pleurocera-Goniobasis sp.									
Valvata sp.									
Pelecypoda									
Unionidae									
Amblema plicata									
Lampsilis ventricosa									
L. radiata									
Leptodea fragilis									
Ligumia recta									
Potamilus alatus									
Quadrula pustulosa									
Sphaeriidae									
Pisidium sp.									
Sphaerium sp.			18				18		
Total	253	325	2206	2534	36	163	109	3095	2317

Notes:

1. Sample collection date: 9-19-73 and 9-26-73
2. Collection method: Ponar Grab
3. Reported as number of individuals per square meter

ANALYSIS OF BENTHOS POPULATIONS AT LOCUST POINT
SEPTEMBER, 1973

BENTHOS SAMPLES	Sta. 10	Sta. 11	Sta. 12	Sta. 13	Sta. 14	Sta. 15	Sta. 16	Sta. 17	Sta. 18
COELENTERATA									
Hydra sp.							18		
PLATYHELMINTHES									
Planariidae									
ANNELIDA									
Hirudinea									
Glossiphonia complanata									
Helobdella stagnalis									
Helobdella elongata									
Oligochaeta, Immatures	181		27	2299	706	3964	706	597	2625
Tubificidae									
Branchyura sowerbyi						91			
Limnodrilus cervix	18			127	36	235		18	235
L. claparedeanus									91
L. claparedeanus-cervix									91
L. hoffmeisteri				272	18	181			181
L. maumeensis				54		54			36
L. udekemianus									
Potamothrix moldaviensis							91	109	
P. vejdovskyi									
Naididae									
Nais sp.									
Naidium sp.									
Pristina sp.									
Stylaria sp.									
Uncinais uncinata sp.									
ARTHROPODA									
Isopoda									
Asellus sp.									
Amphipoda									
Gammarus fasciatus		18							
Hyalella azteca									
Ephemeroptera									
Caenis sp.									
Trichoptera									
Athripsodes sp.									
Oecetis sp.									
Polycentropus sp.									

Notes:

1. Sample collection date: 9-19-73 and 9-26-73
2. Collection method: Ponar Grab
3. Reported as number of individuals per square meter

ANALYSIS OF BENTHOS POPULATIONS AT LOCUST POINT
SEPTEMBER, 1973

BENTHOS SPECIES	Sta. 10	Sta. 11	Sta. 12	Sta. 13	Sta. 14	Sta. 15	Sta. 16	Sta. 17	Sta. 18
ARTHROPODA (Cont.)									
Limnephilidae									
Chironomidae									
Chironominae									
Chironomus (Chironomus) sp.		18		72		109		109	54
C. (Cryptochironomus) sp.				18		18			36
Polypedilum sp.									
Pseudochironomus sp.									
Tanytarsus sp.						18			
Tanypodinae									
Coelotanypus sp.				54		127		18	18
Procladius sp.	18					18		54	54
Orthocladiinae									
Cricotopus sp.									
Psectrocladius sp.									
MOLLUSCA									
Gastropoda									
Amnicola sp.									
Bulimus sp.									
Gyraulus sp.									
Physa sp.									
Pleurocera-Goniobasis sp.									
Valvata sp.									
Pelecypoda									
Unionidae									
Amblema plicata									
Lampsilis ventricosa									
L. radiata									
Leptodea fragilis									
Ligumia recta									
Potamilus alatus									
Quadrula pustulosa									
Sphaeriidae									
Pisidium sp.									
Sphaerium sp.		18				18			
Total	217	54	27	2897	760	4833	815	905	3421

Notes:

1. Sample collection date: 9-19-73 and 9-26-73
2. Collection method: Ponar Grab
3. Reported as number of individuals per square meter

ANALYSIS OF BENTHOS POPULATIONS AT LOCUST POINT
SEPTEMBER, 1973

BENTHOS SAMPLES	Sta. 19	Sta. 20							
COELENTERATA									
Hydra sp.									
PLATYHELMINTHES									
Planariidae									
ANNELIDA									
Hirudinea									
Glossiphonia complanata									
Helobdella stagnalis									
Helobdella elongata									
Oligochaeta, Immatures									
Tubificidae									
Branchyura sowerbyi									
Limnodrilus cervix	18								
L. claparedeanus									
L. claparedeanus-cervix									
L. hoffmeisteri									
L. maumeensis									
L. udekemianus									
Potamothrix moldaviensis									
P. vejdovskyi									
Naididae									
Nais sp.									
Naidium sp.									
Pristina sp.									
Stylaria sp.									
Uncinais uncinata sp.									
ARTHROPODA									
Isopoda									
Asellus sp.									
Amphipoda									
Gammarus fasciatus									
Hyalella azteca									
Ephemeroptera									
Caenis sp.									
Trichoptera									
Athripsodes sp.									
Oecetis sp.									
Polycentropus sp.									

Notes:

1. Sample collection date: 9-19-73 and 9-26-73
2. Collection method: Ponar Grab
3. Reported as number of individuals per square meter

ANALYSIS OF BENTHOS POPULATIONS AT LOCUST POINT
SEPTEMBER, 1973

BENTHOS SPECIES	Sta. 19	Sta. 20							
ARTHROPODA (Cont.)									
Limnephilidae									
Chironomidae									
Chironominae									
Chironomus (Chironomus) sp.	18								
C. (Cryptochironomus) sp.	18								
Polypedilum sp.									
Pseudochironomus sp.									
Tanytarsus sp.									
Tanypodinae									
Coelotanypus sp.	36								
Procladius sp.	36								
Orthocladiinae									
Cricotopus sp.									
Psectrocladius sp.									
MOLLUSCA									
Gastropoda									
Amnicola sp.									
Bulimus sp.									
Gyraulus sp.									
Physa sp.									
Pleurocera-Goniobasis sp.									
Valvata sp.									
Pelecypoda									
Unionidae									
Amblema plicata									
Lampsilis ventricosa									
L. radiata									
Leptodea fragilis									
Ligumia recta									
Potamilus alatus									
Quadrula pustulosa									
Sphaeriidae									
Pisidium sp.									
Sphaerium sp.									
Total	198	0							

Notes:

1. Sample collection date: 9-19-73 and 9-26-73
2. Collection method: Ponar Grab
3. Reported as number of individuals per square meter

ANALYSIS OF BENTHOS POPULATIONS AT LOCUST POINT
NOVEMBER, 1973

BENTHOS SAMPLES	Sta. 1	Sta. 1	Sta. 1	Sta. 2	Sta. 3	Sta. 4	Sta. 4	Sta. 4	Sta. 5
COELENTERATA									
Hydra sp.					36	72	18		
PLATYHELMINTHES									
Planariidae									
ANNELIDA									
Hirudinea									
Glossiphonia complanata									
Helobdella stagnalis									
Helobdella elongata									
Oligochaeta, Immatures	869	344	1466	253	2425	5321	2769	3421	
Tubificidae									
Branchyura sowerbyi	36				18	217	72	235	
Limnodrilus cervix						18		54	
L. claparedeanus								18	
L. claparedeanus-cervix									
L. hoffmeisteri						18			
L. maumeensis									
L. udekemianus									
Potamothrix moldaviensis	36							36	
P. vejdovskyi								18	
Naididae									
Nais sp.									
Naidium sp.									
Pristina sp.									
Stylaria sp.									
Uncinais uncinata sp.									
ARTHROPODA									
Isopoda									
Asellus sp.									
Amphipoda									
Gammarus fasciatus									
Hyalella azteca									
Ephemeroptera									
Caenis sp.									
Trichoptera									
Athripsodes sp.									
Oecetis sp.									
Polycentropus sp.									

Notes:

1. Sample collection date: 11-2-73 and 11-7-73
2. Collection method: Ponar Grab
3. Reported as number of individuals per square meter

ANALYSIS OF BENTHOS POPULATIONS AT LOCUST POINT
NOVEMBER, 1973

BENTHOS SPECIES	Sta. 1	Sta. 1	Sta. 1	Sta. 2	Sta. 3	Sta. 4	Sta. 4	Sta. 4	Sta. 5
ARTHROPODA (Cont.)									
Limnephilidae									
Chironomidae									
Chironominae									
Chironomus (Chironomus) sp.			36		54	127	18	181	
C. (Cryptochironomus) sp.		36	36						
Polypedilum sp.						18			
Pseudochironomus sp.									
Tanytarsus sp.		18	36	36	18	19566	18353	18589	
Tanypodinae									
Coelotanypus sp.									
Procladius sp.							36	127	
Orthocladiinae									
Cricotopus sp.									
Psectrocladius sp.									
MOLLUSCA									
Gastropoda									
Amnicola sp.									
Bulimus sp.									
Gyraulus sp.									
Physa sp.									
Pleurocera-Goniobasis sp.									
Valvata sp.									
Pelecypoda									
Unionidae									
Amblema plicata									
Lampsilis ventricosa									
L. radiata									
Leptodea fragilis									
Ligumia recta									
Potamilus alatus									
Quadrula pustulosa									
Sphaeriidae									
Pisidium sp.									
Sphaerium sp.				18					
Total	941	398	1574	307	2552	25357	21266	22379	0

Notes:

1. Sample collection date: 11-2-73 and 11-7-73
2. Collection method: Ponar Grab
3. Reported as number of individuals per square meter

ANALYSIS OF BENTHOS POPULATIONS AT LOCUST POINT
NOVEMBER, 1973

BENTHOS SAMPLES	Sta. 6	Sta. 7	Sta. 8	Sta. 8	Sta. 8	Sta. 9	Sta. 10	Sta. 11	Sta. 12
COELENTERATA									
Hydra sp.							18		18
PLATYHELMINTHES									
Planariidae									
ANNELIDA									
Hirudinea									
Glossiphonia complanata									
Helobdella stagnalis									
Helobdella elongata									
Oligochaeta, Immatures	72	507	2769	181	1484	2045	54	109	2968
Tubificidae									
Branchyura sowerbyi		36	18						
Limnodrilus cervix			54						109
L. claparedeanus			36						
L. claparedeanus-cervix									
L. hoffmeisteri			36			18		18	18
L. maumeensis									
L. udekemianus									
Potamothrix moldaviensis			91		72				54
P. vejdovskyi									
Naididae									
Nais sp.									
Naidium sp.									
Pristina sp.									
Stylaria sp.									
Uncinais uncinata sp.									
ARTHROPODA									
Isopoda									
Asellus sp.									
Amphipoda									
Gammarus fasciatus	54			18				36	
Hyalella azteca									
Ephemeroptera									
Caenis sp.									
Trichoptera									
Athripsodes sp.									
Oecetis sp.									
Polycentropus sp.									

Notes:

1. Sample collection date: 11-2-73 and 11-7-73
2. Collection method: Ponar Grab
3. Reported as number of individuals per square meter

ANALYSIS OF BENTHOS POPULATIONS AT LOCUST POINT
NOVEMBER, 1973

BENTHOS SPECIES	Sta. 6	Sta. 7	Sta. 8	Sta. 8	Sta. 8	Sta. 9	Sta. 10	Sta. 11	Sta. 12
ARTHROPODA (Cont.)									
Limnephilidae									
Chironomidae									
Chironominae									
Chironomus (Chironomus) sp.			18			18	109	127	
C. (Cryptochironomus) sp.						18		18	18
Polypedilum sp.								18	
Pseudochironomus sp.									
Tanytarsus sp.		54	217	18	326	21503			
Tanypodinae									
Coelotanypus sp.									
Procladius sp.									
Orthocladiinae									
Cricotopus sp.									
Psectrocladius sp.									
MOLLUSCA									
Gastropoda									
Amnicola sp.									
Bulimus sp.									
Gyraulus sp.									
Physa sp.									
Pleurocera-Goniobasis sp.									
Valvata sp.									
Pelecypoda									
Unionidae									
Amblema plicata									
Lampsilis ventricosa									
L. radiata					18				
Leptodea fragilis									
Ligumia recta									
Potamilus alatus									
Quadrula pustulosa									
Sphaeriidae									
Pisidium sp.									
Sphaerium sp.									
Total	126	597	3240	217	1901	23602	181	326	3185

Notes:

1. Sample collection date: 11-2-73 and 11-7-73
2. Collection method: Ponar Grab
3. Reported as number of individuals per square meter

ANALYSIS OF BENTHOS POPULATIONS AT LOCUST POINT
NOVEMBER, 1973

BENTHOS SPECIES	Sta. 12	Sta. 13	Sta. 14	Sta. 15	Sta. 16	Sta. 17	Sta. 18	Sta. 19	Sta. 20
ARTHROPODA (Cont.)									
Limnephilidae									
Chironomidae									
Chironominae									
Chironomus (Chironomus) sp.			344	416			380		18
C. (Cryptochironomus) sp.				36					
Polypedilum sp.				18					
Pseudochironomus sp.									
Tanytarsus sp.		18		18					
Tanypodinae									
Coelotanypus sp.				127			36		
Procladius sp.				36					
Orthocladiinae									
Cricotopus sp.									
Psectrocladius sp.			72						
MOLLUSCA									
Gastropoda									
Amnicola sp.									
Bulimus sp.									
Gyraulus sp.									
Physa sp.									
Pleurocera-Goniobasis sp.									
Valvata sp.									
Pelecypoda									
Unionidae									
Amblema plicata									
Lampsilis ventricosa									
L. radiata									
Leptodea fragilis									
Ligumia recta									
Potamilus alatus									
Quadrula pustulosa									
Sphaeriidae									
Pisidium sp.									
Sphaerium sp.									
Total	344	1285	3221	3293	434	669	3059	507	18

Notes:

1. Sample collection date: 11-2-73 and 11-7-73
2. Collection method: Ponar Grab
3. Reported as number of individuals per square meter

ANALYSIS OF BENTHOS POPULATIONS AT LOCUST POINT
NOVEMBER, 1973

BENTHOS SAMPLES	Sta. 12	Sta. 13	Sta. 14	Sta. 15	Sta. 16	Sta. 17	Sta. 18	Sta. 19	Sta. 20
COELENTERATA									
Hydra sp.	18	18							
PLATYHELMINTHES									
Planariidae									
ANNELIDA									
Hirudinea									
Glossiphonia complanata									
Helobdella stagnalis									
Helobdella elongata									
Oligochaeta, Immatures	326	1249	2226	2534	434	615	2172	507	
Tubificidae									
Branchyura sowerbyi				36			36		
Limnodrilus cervix			235	54			163		
L. claparedeanus			109			18	18		
L. claparedeanus-cervix									
L. hoffmeisteri			181	18		18	127		
L. maumeensis									
L. udekemianus									
Potamothrix moldaviensis			54			18	91		
P. vejdovskyi									
Naididae									
Nais sp.									
Naidium sp.									
Pristina sp.									
Stylaria sp.									
Uncinais uncinata sp.									
ARTHROPODA									
Isopoda									
Asellus sp.									
Amphipoda									
Gammarus fasciatus							36		
Hyalella azteca									
Ephemeroptera									
Caenis sp.									
Trichoptera									
Athripsodes sp.									
Oecetis sp.									
Polycentropus sp.									

Notes:

1. Sample collection date: 11-2-73 and 11-7-73
2. Collection method: Ponar Grab
3. Reported as number of individuals per square meter

ANALYSIS OF BENTHOS POPULATIONS AT LOCUST POINT
DECEMBER, 1973

BENTHOS SAMPLES	Sta. 1	Sta. 2	Sta. 3	Sta. 4	Sta. 5	Sta. 6	Sta. 7	Sta. 8	Sta. 9
COELENTERATA									
Hydra sp.							362		18
PLATYHELMINTHES									
Planariidae									
ANNELIDA									
Hirudinea									
Glossiphonia complanata									
Helobdella stagnalis									
Helobdella elongata									
Oligochaeta, Immatures	127	235	2190	2118	145		579	253	2172
Tubificidae									
Branchyura sowerbyi				109					18
Limnodrilus cervix								36	
L. claparedeanus				18					
L. claparedeanus-cervix									
L. hoffmeisteri				18				18	
L. maumeensis									
L. udekemianus									
Potamothrix moldaviensis				18					
P. vejdovskyi									
Naididae									
Nais sp.									
Naidium sp.									
Pristina sp.									
Stylaria sp.									
Uncinais uncinata sp.									
ARTHROPODA									
Isopoda									
Asellus sp.									
Amphipoda									
Gammarus fasciatus									
Hyalella azteca									
Ephemeroptera									
Caenis sp.									
Trichoptera									
Athripsodes sp.									
Oecetis sp.									
Polycentropus sp.									

Notes:

1. Sample collection date: 12-4-73
2. Collection method: Ponar Grab
3. Reported as number of individuals per square meter

ANALYSIS OF BENTHOS POPULATIONS AT LOCUST POINT
DECEMBER, 1973

BENTHOS SPECIES	Sta. 1	Sta. 2	Sta. 3	Sta. 4	Sta. 5	Sta. 6	Sta. 7	Sta. 8	Sta. 9
ARTHROPODA (Cont.)									
Limnephilidae									
Chironomidae									
Chironominae									
Chironomus (Chironomus) sp.			18	36	54				18
C. (Cryptochironomus) sp.			18	18	72				
Polypedilum sp.									
Pseudochironomus sp.					36				
Tanytarsus sp.	36	54	416	91	127			18	380
Tanypodinae									
Coelotanypus sp.									
Procladius sp.			18	18					
Orthocladiinae									
Cricotopus sp.									
Psectrocladius sp.									
MOLLUSCA									
Gastropoda									
Amnicola sp.									
Bulimus sp.									
Gyraulus sp.									
Physa sp.									
Pleurocera-Goniobasis sp.									
Valvata sp.									
Pelecypoda									
Unionidae									
Amblema plicata									
Lampsilis ventricosa									
L. radiata									
Leptodea fragilis									
Ligumia recta									
Potamilus alatus									
Quadrula pustulosa									
Sphaeriidae									
Pisidium sp.									
Sphaerium sp.					18				
Total	163	289	2660	2444	452	0	941	325	2606

Notes:

1. Sample collection date: 12-4-73
2. Collection method: Ponar Grab
3. Reported as number of individuals per square meter

ANALYSIS OF BENTHOS POPULATIONS AT LOCUST POINT
DECEMBER, 1973

BENTHOS SPECIES	Sta. 10	Sta. 11	Sta. 12	Sta. 13	Sta. 14	Sta. 15	Sta. 16	Sta. 17	Sta. 18
ARTHROPODA (Cont.)									
Limnephilidae									
Chironomidae									
Chironominae									
Chironomus (Chironomus) sp.	597	869	253						543
C. (Cryptochironomus) sp.	54		18	18	18	18			36
Polypedilum sp.									
Pseudochironomus sp.									
Tanytarsus sp.				36	54	36			
Tanypodinae									
Coelotanypus sp.			18						36
Procladius sp.	18	54	109						127
Orthocladiinae									
Cricotopus sp.									
Psectrocladius sp.									
MOLLUSCA									
Gastropoda									
Amnicola sp.									
Bulimus sp.									
Gyraulus sp.									
Physa sp.									
Pleurocera-Goniobasis sp.									
Valvata sp.									
Pelecypoda									
Unionidae									
Amblema plicata									
Lampsilis ventricosa									
L. radiata									
Leptodea fragilis									
Ligumia recta									
Potamilus alatus									
Quadrula pustulosa									
Sphaeriidae									
Pisidium sp.									
Sphaerium sp.									
Total	1682	4489	3674	2497	1520	4344	362	0	6861

Notes:

1. Sample collection date: 12-4-73
2. Collection method: Ponar Grab
3. Reported as number of individuals per square meter

TABLE A-7 CONT.

ANALYSIS OF BENTHOS POPULATIONS AT LOCUST POINT

DECEMBER, 1973

BENTHOS SAMPLES	Sta. 10	Sta. 11	Sta. 12	Sta. 13	Sta. 14	Sta. 15	Sta. 16	Sta. 17	Sta. 18
COELENTERATA									
Hydra sp.					163				
PLATYHELMINTHES									
Planariidae									
ANNELIDA									
Hirudinea									
Glossiphonia complanata									
Helobdella stagnalis									
Helobdella elongata									
Oligochaeta, Immatures	959	2552	2860	2244	1285	4272	362		5231
Tubificidae									
Branchyura sowerbyi	36		36						217
Limnodrilus cervix		344	127			18			308
L. claparedeanus		326	54						91
L. claparedeanus-cervix									
L. hoffmeisteri		181	163	199					272
L. maumeensis									
L. udekemianus									
Potamothrix moldaviensis	18	163	36						
P. vejdovskyi									
Naididae									
Nais sp.									
Naidium sp.									
Pristina sp.									
Stylaria sp.									
Uncinais uncinata sp.									
ARTHROPODA									
Isopoda									
Asellus sp.									
Amphipoda									
Gammarus fasciatus									
Hyalella azteca									
Ephemeroptera									
Caenis sp.									
Trichoptera									
Athripsodes sp.									
Oecetis sp.									
Polycentropus sp.									

Notes:

1. Sample collection date: 12-4-73
2. Collection method: Ponar Grab
3. Reported as number of individuals per square meter

ANALYSIS OF BENTHOS POPULATIONS AT LOCUST POINT
DECEMBER, 1973

BENTHOS SPECIES	Sta. 19	Sta. 20							
ARTHROPODA (Cont.)									
Limnephilidae									
Chironomidae									
Chironominae									
Chironomus (Chironomus) sp.									
C. (Cryptochironomus) sp.									
Polypedilum sp.									
Pseudochironomus sp.									
Tanytarsus sp.									
Tanypodinae									
Coelotanypus sp.									
Procladius sp.									
Orthocladiinae									
Cricotopus sp.									
Psectrocladius sp.									
MOLLUSCA									
Gastropoda									
Amnicola sp.									
Bulimus sp.									
Gyraulus sp.									
Physa sp.									
Pleurocera-Goniobasis sp.									
Valvata sp.									
Pelecypoda									
Unionidae									
Amblema plicata									
Lampsilis ventricosa									
L. radiata									
Leptodea fragilis									
Ligumia recta									
Potamilus alatus									
Quadrula pustulosa									
Sphaeriidae									
Pisidium sp.									
Sphaerium sp.									
Total	271	181							

Notes:

1. Sample collection date: 12-4-73
2. Collection method: Ponar Grab
3. Reported as number of individuals per square meter

ANALYSIS OF BENTHOS POPULATIONS AT LOCUST POINT
DECEMBER, 1973

BENTHOS SAMPLES	Sta. 19	Sta. 20
COELENTERATA		
Hydra sp.		
PLATYHELMINTHES		
Planariidae		
ANNELIDA		
Hirudinea		
Glossiphonia complanata		
Helobdella stagnalis		
Helobdella elongata		
Oligochaeta, Immatures	235	181
Tubificidae		
Branchyura sowerbyi		
Limnodrilus cervix		
L. claparedeanus		
L. claparedeanus-cervix		
L. hoffmeisteri	36	
L. maumeensis		
L. udekemianus		
Potamothrix moldaviensis		
P. vejdovskyi		
Naididae		
Nais sp.		
Naidium sp.		
Pristina sp.		
Stylaria sp.		
Uncinais uncinata sp.		
ARTHROPODA		
Isopoda		
Asellus sp.		
Amphipoda		
Gammarus fasciatus		
Hyalella azteca		
Ephemeroptera		
Caenis sp.		
Trichoptera		
Athripsodes sp.		
Oecetis sp.		
Polycentropus sp.		

Notes:

1. Sample collection date: 12-4-73
2. Collection method: Ponar Grab
3. Reported as number of individuals per square meter

APPENDIX III

ANALYSIS OF MACROBENTHOS SAMPLES 1974

ANALYSIS OF BENTHOS SAMPLES FROM LOCUST POINT - April, 1974

TAXA	Station 1		Station 2		Station 3		Station 4	
	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.
COELENTERATA								
Hydra sp. (budding polyp)								
Hydra sp. (single polyp)								
ANNELIDA								
Hirudinea								
Helobdella stagnalis								
Oligochaeta							25	44
Immatures (hair setea)	13	22						
Immatures (nohair setea)	6	11	70	73	1464	879	2890	1627
Branchyura sowerbyi							38	38
Limnodrilus cervix								
L. claparedeanus								
L. claparedeanus-cervix								
L. hoffmeisteri								
L. maumeensis								
L. udekemianus								
Potamothrix moldaviensis							6	11
P. vejdovskyi								
ARTHROPODA								
Cladocera								
Leptodora kindtii								
Amphipoda								
Gammarus fasciatus								
Decopoda								
Orconectes sp.								
Chironomidae								
Chironomus (chironomus) sp.			6	11	45	48	204	228
Chironomus pupa					6	11		
Cryptochironomus sp.								
Polypedilum sp.					25	22	51	40
Procladius sp.								
Procladius pupa			6	11				
Pseudochironomus sp.								
Tanypodinae pupa							13	22
Tanytarsus sp.								
Tanytarsus pupa								
Ephemeroptera								
Caenis sp.								
Trichoptera								
Hydropsychidae			6	11				
MOLLUSCA								
Gastropoda								
Bulimus sp.			6	11				
Pelecypoda								
Amblema plicata								
Sphaerium sp.								
Station Total	19	33	98	58	1541	950	3228	1845

Note: Data presented as no./m^2
Exact Sampling dates were April 17 and 18, 1974

ANALYSIS OF BENTHOS SAMPLES FROM LOCUST POINT - April, 1974

TAXA	Station 5		Station 6		Station 7		Station 8	
	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.
COELENTERATA								
Hydra sp. (budding polyp)								
Hydra sp. (single polyp)								
ANNELIDA								
Hirudinea								
Helobdella stagnalis								
Oligochaeta								
Immatures (hair setea)								
Immatures (nohair setea)	299	48			2604	3337	3069	340
Branchyura sowerbyi	13	11			38	66	96	88
Limnodrilus cervix								
L. claparedeanus					6	11		
L. claparedeanus-cervix								
L. hoffmeisteri					6	11		
L. maumeensis								
L. udekemianus					38	51		
Potamothrix moldaviensis					45	77	6	11
P. vejdovskyi					13	11		
ARTHROPODA								
Cladocera								
Leptodora kindtii								
Amphipoda								
Gammarus fasciatus			32	55				
Decopoda								
Orconectes sp.								
Chironomidae								
Chironomus (chironomus) sp.			25	29	770	839	172	19
Chironomus pupa								
Cryptochironomus sp.			25	44	13	11		
Polypedilum sp.								
Procladius sp.			6	11	153	101	19	19
Procladius pupa								
Pseudochironomus sp.								
Tanypodinae pupa								
Tanytarsus sp.			76	77	76	83		
Tanytarsus pupa								
Ephemeroptera								
Caenis sp.								
Trichoptera								
Hydropsychidae								
MOLLUSCA								
Gastropoda								
Bulimus sp.								
Pelecypoda								
Amblema plicata								
Sphaerium sp.								
Station Total	312	40	166	67	3763	4383	3361	281

Note: Data presented as no./m^2
Exact Sampling dates were April 17 and 18, 1974

ANALYSIS OF BENTHOS SAMPLES FROM LOCUST POINT - April, 1974

TAXA	Station 9		Station 10		Station 11		Station 12	
	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.
COELENTERATA								
Hydra sp. (budding polyp)	32	55						
Hydra sp. (single polyp)								
ANNELIDA								
Hirudinea								
Helobdella stagnalis								
Oligochaeta								
Immatures (hair setea)								
Immatures (nohair setea)	841	250	44	40	166	184	917	801
Branchyura sowerbyi								
Limnodrilus cervix								
L. claparedeanus							6	11
L. claparedeanus-cervix								
L. hoffmeisteri								
L. maumeensis								
L. udekemianus								
Potamothrix moldaviensis	6	11						
P. vejdovskyi								
ARTHROPODA								
Cladocera								
Leptodora kindtii								
Amphipoda								
Gammarus fasciatus					25	22	6	11
Decopoda								
Orconectes sp.								
Chironomidae								
Chironomus (chironomus) sp.	19	0	13	11	191	144	229	229
Chironomus pupa								
Cryptochironomus sp.							13	22
Polypedilum sp.								
Procladius sp.							6	11
Procladius pupa								
Pseudochironomus sp.								
Tanypodinae pupa								
Tanytarsus sp.								
Tanytarsus pupa								
Ephemeroptera								
Caenis sp.								
Trichoptera								
Hydropsychidae								
MOLLUSCA								
Gastropoda								
Bulimus sp.								
Pelecypoda								
Amblema plicata								
Sphaerium sp.								
Station Total	898	244	57	51	382	266	1178	989

Note: Data presented as no./m^2
Exact Sampling dates were April 17 and 18, 1974

ANALYSIS OF BENTHOS SAMPLES FROM LOCUST POINT - April, 1974

TAXA	Station 13		Station 14		Station 15		Station 16	
	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.
COELENTERATA								
Hydra sp. (budding polyp)								
Hydra sp. (single polyp)								
ANNELIDA								
Hirudinea								
Helobdella stagnalis								
Oligochaeta								
Immatures (hair setea)					13	22		
Immatures (nohair setea)	1210	1220	5023	2597	337	287	382	82
Branchyura sowerbyi	6	11	70	11				
Limnodrilus cervix								
L. claparedeanus								
L. claparedeanus-cervix								
L. hoffmeisteri								
L. maumeensis								
L. udekemianus							6	11
Potamothrix moldaviensis			76	69				
P. vejdovskyi			6	11			6	11
ARTHROPODA								
Cladocera								
Leptodora kindtii								
Amphipoda								
Gammarus fasciatus					6	11		
Decopoda								
Orconectes sp.								
Chironomidae								
Chironomus (chironomus) sp.			503	230			6	11
Chironomus pupa								
Cryptochironomus sp.	13	11	6	11				
Polypedilum sp.								
Procladius sp.			172	38				
Procladius pupa								
Pseudochironomus sp.								
Tanypodinae pupa								
Tanytarsus sp.								
Tanytarsus pupa								
Ephemeroptera								
Caenis sp.								
Trichoptera								
Hydropsychidae								
MOLLUSCA								
Gastropoda								
Bulimus sp.								
Pelecypoda								
Amblema plicata								
Sphaerium sp.								
Station Total	1293	1164	5851	2404	357	267	401	66

Note: Data presented as no./m^2

Exact Sampling dates were April 17 and 18, 1974

ANALYSIS OF BENTHOS SAMPLES FROM LOCUST POINT - April, 1974

TAXA	Station 17		Station 18		Station 19		Station 20	
	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.
COELENTERATA								
Hydra sp. (budding polyp)	6	11						
Hydra sp. (single polyp)								
ANNELIDA								
Hirudinea								
Helobdella stagnalis								
Oligochaeta								
Immatures (hair setea)								
Immatures (nohair setea)	44	29	3584	1415	286	447	121	193
Branchyura sowerbyi			6	11				
Limnodrilus cervix								
L. claparedeanus			6	11				
L. claparedeanus-cervix								
L. hoffmeisteri								
L. maumeensis								
L. udekemianus								
Potamothrix moldaviensis	6	11	25	29	19	19	6	11
P. vejdovskyi								
ARTHROPODA								
Cladocera								
Leptodora kindtii								
Amphipoda								
Gammarus fasciatus								
Decopoda								
Orconectes sp.								
Chironomidae								
Chironomus (chironomus) sp.			13	22	6	11	25	28
Chironomus pupa								
Cryptochironomus sp.								
Polypedilum sp.								
Procladius sp.					13	11	13	22
Procladius pupa								
Pseudochironomus sp.								
Tanypodinae pupa								
Tanytarsus sp.								
Tanytarsus pupa								
Ephemeroptera								
Caenis sp.								
Trichoptera								
Hydropsychidae								
MOLLUSCA								
Gastropoda								
Bulimus sp.								
Pelecypoda								
Amblema plicata								
Sphaerium sp.								
Station Total	57	39	3635	1448	325	464	178	277

Note: Data presented as no./m^2
Exact Sampling dates were April 17 and 18, 1974

ANALYSIS OF BENTHOS SAMPLES FROM LOCUST POINT - May, 1974

TAXA	Station 1		Station 2		Station 3		Station 4	
	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.
COELENTERATA								
Hydra sp. (budding polyp)								
Hydra sp. (single polyp)			19	19	19	33	19	19
ANNELIDA	6	11	25	22			13	22
Hirudinea								
Helobdella stagnalis								
Oligochaeta								
Immatures (hair setea)								
Immatures (nohair setea)	19	0	433	234	1458	1169	2084	749
Branchyura sowerbyi					19	33	44	22
Limnodrilus cervix			13	22	6	11	13	11
L. claparedeanus					38	66	38	38
L. claparedeanus-cervix								
L. hoffmeisteri					6	11	6	11
L. maumeensis								
L. udekemianus					6	11	19	19
Potamothrix moldaviensis								
P. vejdovskyi					19	33		
ARTHROPODA								
Cladocera								
Leptodora kindtii								
Amphipoda								
Gammarus fasciatus								
Decopoda								
Orconectes sp.								
Chironomidae								
Chironomus (chironomus) sp.	13	22	6	11	19	19	32	55
Chironomus pupa					6	11		
Cryptochironomus sp.			19	19	19	33	38	33
Polypedilum sp.					13	22		
Procladius sp.					25	22	19	19
Procladius pupa	6	11						
Pseudochironomus sp.								
Tanypodinae pupa								
Tanytarsus sp.								
Tanytarsus pupa								
Ephemeroptera								
Caenis sp.								
Trichoptera								
Hydropsychidae								
MOLLUSCA								
Gastropoda								
Bulimus sp.								
Pelecypoda								
Amblema plicata							6	11
Sphaerium sp.					6	11	13	11
Station Total	44	29	516	287	1162	1338	2375	706

Notes: Data presented as no./m^2
Exact sampling dates were May 22 and 23, 1974
Station 20 was drained of all water for construction

ANALYSIS OF BENTHOS SAMPLES FROM LOCUST POINT - May, 1974

TAXA	Station 5		Station 6		Station 7		Station 8	
	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.
COELENTERATA								
Hydra sp. (budding polyp)								
Hydra sp. (single polyp)								
ANNELIDA								
Hirudinea								
Helobdella stagnalis					19	19		
Oligochaeta								
Immatures (hair setea)								
Immatures (nohair setea)	121	109	2802	1691	1751	1942	83	143
Branchyura sowerbyi			51	40	108	94		
Limnodrilus cervix			6	11	19	33		
L. claparedeanus			13	11	32	55		
L. claparedeanus-cervix					25	44		
L. hoffmeisteri					6	11		
L. maumeensis								
L. udekemianus			6	11	6	11		
Potamothrix moldaviensis								
P. vejdovskyi								
ARTHROPODA								
Cladocera								
Leptodora kindtii								
Amphipoda								
Gammarus fasciatus							6	11
Decopoda								
Orconectes sp.								
Chironomidae								
Chironomus (chironomus) sp.	13	22	13	22	356	552	133	116
Chironomus pupa								
Cryptochironomus sp.			13	11				
Polypedilum sp.								
Procladius sp.	6	11	13	22	70	121	13	22
Procladius pupa							6	11
Pseudochironomus sp.					6	11		
Tanypodinae pupa							6	11
Tanytarsus sp.								
Tanytarsus pupa								
Ephemeroptera								
Caenis sp.								
Trichoptera								
Hydropsychidae								
MOLLUSCA								
Gastropoda								
Bulimus sp.								
Pelecypoda								
Amblema plicata			6	11				
Sphaerium sp.			19	33	13	22		
Station Total	140	90	2941	1735	2413	2194	255	105

Notes: Data presented as no./m^2
Exact sampling dates were May 22 and 23, 1974
Station 20 was drained of all water for construction

ANALYSIS OF BENTHOS SAMPLES FROM LOCUST POINT - May, 1974

TAXA	Station 9		Station 10		Station 11		Station 12	
	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.
COELENTERATA								
Hydra sp. (budding polyp)	6	11						
Hydra sp. (single polyp)								
ANNELIDA								
Hirudinea								
Helobdella stagnalis								
Oligochaeta								
Immatures (hair setea)								
Immatures (nohair setea)	1363	681	32	29	376	109	2693	730
Branchyura sowerbyi	6	11					19	19
Limnodrilus cervix							6	11
L. claparedeanus							13	11
L. claparedeanus-cervix								
L. hoffmeisteri							25	22
L. maumeensis								
L. udekemianus	25	22					25	29
Potamothrix moldaviensis								
P. vejdovskyi								
ARTHROPODA								
Cladocera								
Leptodora kindtii								
Amphipoda								
Gammarus fasciatus								
Decopoda								
Orconectes sp.								
Chironomidae								
Chironomus (chironomus) sp.	6	11	19	33	6	11	6	11
Chironomus pupa								
Cryptochironomus sp.							6	11
Polypedilum sp.								
Procladius sp.								
Procladius pupa							13	22
Pseudochironomus sp.	6	11						
Tanypodinae pupa			6	11				
Tanytarsus sp.								
Tanytarsus pupa								
Ephemeroptera								
Caenis sp.								
Trichoptera								
Hydropsychidae								
MOLLUSCA								
Gastropoda								
Bulimus sp.								
Pelecypoda								
Amblema plicata								
Sphaerium sp.								
Station Total	1414	653	57	19	382	119	2808	712

Notes: Data presented as no./m^2
Exact sampling dates were May 22 and 23, 1974
Station 20 was drained of all water for construction

ANALYSIS OF BENTHOS SAMPLES FROM LOCUST POINT - May, 1974

TAXA	Station 13		Station 14		Station 15		Station 16	
	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.
COELENTERATA								
Hydra sp. (budding polyp)	13	11			25	29	6	11
Hydra sp. (single polyp)			6	11	6	11	13	22
ANNELIDA								
Hirudinea								
Helobdella stagnalis								
Oligochaeta								
Immatures (hair setea)								
Immatures (nohair setea)	427	493	3680	1500	51	48	108	58
Branchyura sowerbyi			13	11				
Limnodrilus cervix			6	11				
L. claparedeanus			38	19				
L. claparedeanus-cervix								
L. hoffmeisteri			13	11				
L. maumeensis								
L. udekemianus			19	19			6	11
Potamothrix moldaviensis								
P. vejdovskyi								
ARTHROPODA								
Cladocera								
Leptodora kindtii								
Amphipoda								
Gammarus fasciatus								
Decopoda								
Orconectes sp.								
Chironomidae								
Chironomus (chironomus) sp.	25	22	70	23	6	11	6	11
Chironomus pupa								
Cryptochironomus sp.			13	11				
Polypedilum sp.								
Procladius sp.			134	38				
Procladius pupa								
Pseudochironomus sp.								
Tanypodinae pupa								
Tanytarsus sp.								
Tanytarsus pupa								
Ephemeroptera								
Caenis sp.								
Trichoptera								
Hydropsychidae								
MOLLUSCA								
Gastropoda								
Bulimus sp.			6	11				
Pelecypoda								
Amblema plicata								
Sphaerium sp.								
Station Total	465	517	3998	1516	89	30	134	50

Notes: Data presented as no./m^2
Exact sampling dates were May 22 and 23, 1974
Station 20 was drained of all water for construction

ANALYSIS OF BENTHOS SAMPLES FROM LOCUST POINT - May, 1974

TAXA	Station 17		Station 18		Station 19			
	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.
COELENTERATA								
Hydra sp. (budding polyp)			38	38				
Hydra sp. (single polyp)	13	22						
ANNELIDA								
Hirudinea								
Helobdella stagnalis								
Oligochaeta								
Immatures (hair setea)								
Immatures (nohair setea)	2973	1210	121	73	497	149		
Branchyura sowerbyi	6	11						
Limnodrilus cervix					6	11		
L. claparedeanus	25	22						
L. claparedeanus-cervix								
L. hoffmeisteri								
L. maumeensis	13	22						
L. udekemianus	19	33	45	62	13	22		
Potamothrix moldaviensis	6	11						
P. vejdovskyi								
ARTHROPODA								
Cladocera								
Leptodora kindtii								
Amphipoda								
Gammarus fasciatus								
Decopoda								
Orconectes sp.								
Chironomidae								
Chironomus (chironomus) sp.					38	33		
Chironomus pupa								
Cryptochironomus sp.	13	22						
Polypedilum sp.								
Procladius sp.	13	11			57	33		
Procladius pupa					6	11		
Pseudochironomus sp.								
Tanypodinae pupa								
Tanytarsus sp.								
Tanytarsus pupa								
Ephemeroptera								
Caenis sp.								
Trichoptera								
Hydropsychidae								
MOLLUSCA								
Gastropoda								
Bulimus sp.								
Pelecypoda								
Amblema plicata								
Sphaerium sp.								
Station Total	3082	1224	204	112	618	139		

Notes: Data presented as no./m^2
Exact sampling dates were May 22 and 23, 1974
Station 20 was drained of all water for construction

ANALYSIS OF BENTHOS SAMPLES FROM LOCUST POINT - June, 1974

TAXA	Station 1		Station 2		Station 3		Station 4	
	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.
COELENTERATA								
Hydra sp. (budding polyp)	186	225			280	452	433	509
Hydra sp. (single polyp)	567	669			146	124	350	412
ANNELIDA								
Hirudinea								
Helobdella stagnalis								
Oligochaeta								
Immatures (hair setea)								
Immatures (nohair setea)	503	403			2317	1674	1197	812
Branchyura sowerbyi					32	29	19	19
Limnodrilus cervix								
L. claparedeanus			89	154	38	38	19	33
L. claparedeanus-cervix								
L. hoffmeisteri								
L. maumeensis								
L. udekemianus								
Potamothrix moldaviensis	83	80					25	22
P. vejdovskyi								
ARTHROPODA								
Cladocera								
Leptodora kindtii					38	19	13	11
Amphipoda								
Gammarus fasciatus	102	177	25	29				
Decopoda								
Orconectes sp.	6	11						
Chironomidae								
Chironomus (chironomus) sp.	32	55	13	22	57	69	38	51
Chironomus pupa								
Cryptochironomus sp.	6	11			13	11		
Polypedilum sp.	6	11						
Procladius sp.	6	11			76	58	32	11
Procladius pupa							6	11
Pseudochironomus sp.							6	11
Tanypodinae pupa								
Tanytarsus sp.	160	277			1165	832	541	365
Tanytarsus pupa	6	11			6	11		
Ephemeroptera								
Caenis sp.	19	33	6	11				
Trichoptera								
Hydropsychidae								
MOLLUSCA								
Gastropoda								
Bulimus sp.			6	11				
Pelecypoda								
Amblema plicata								
Sphaerium sp.			6	11			6	11
Station Total	1700	1845	147	141	4170	2801	2693	1932

Notes: Data presented as no./m^2
Exact sampling dates were June 19 and 20, 1974
Station 20 was drained of all water for construction

ANALYSIS OF BENTHOS SAMPLES FROM LOCUST POINT - June, 1974

TAXA	Station 5		Station 6		Station 7		Station 8	
	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.
COELENTERATA								
Hydra sp. (budding polyp)	13	22			25	44	51	88
Hydra sp. (single polyp)	77	69	6	11	13	11	70	67
ANNELIDA								
Hirudinea								
Helobdella stagnalis								
Oligochaeta								
Immatures (hair setea)								
Immatures (nohair setea)	13	22	64	67	267	170	783	163
Branchyura sowerbyi								
Limnodrilus cervix			6	11	6	11	13	11
L. claparedeanus								
L. claparedeanus-cervix								
L. hoffmeisteri								
L. maumeensis								
L. udekemianus								
Potamothrix moldaviensis	13	22					6	11
P. vejdovskyi								
ARTHROPODA							25	29
Cladocera								
Leptodora kindtii								
Amphipoda								
Gammarus fasciatus								
Decopoda								
Orconectes sp.								
Chironomidae								
Chironomus (chironomus) sp.			6	11			153	69
Chironomus pupa								
Cryptochironomus sp.								
Polypedilum sp.					13	22	96	20
Procladius sp.								
Procladius pupa								
Pseudochironomus sp.								
Tanypodinae pupa								
Tanytarsus sp.			108	155	108	98	369	61
Tanytarsus pupa							13	22
Ephemeroptera								
Caenis sp.								
Trichoptera								
Hydropsychidae								
MOLLUSCA								
Gastropoda								
Bulimus sp.								
Pelecypoda								
Amblema plicata								
Sphaerium sp.							6	11
Station Total	115	19	191	217	433	324	1585	381

Notes: Data presented as no./m^2
Exact sampling dates were June 19 and 20, 1974
Station 20 was drained of all water for construction

ANALYSIS OF BENTHOS SAMPLES FROM LOCUST POINT – June, 1974

TAXA	Station 9		Station 10		Station 11		Station 12	
	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.
COELENTERATA								
Hydra sp. (budding polyp)	6	11						
Hydra sp. (single polyp)	19	19						
ANNELIDA								
Hirudinea								
Helobdella stagnalis								
Oligochaeta								
Immatures (hair setea)								
Immatures (nohair setea)	478	326			547	559	433	239
Branchyura sowerbyi					13	22	6	11
Limnodrilus cervix					45	48		
L. claparedeanus					83	73	6	11
L. claparedeanus-cervix								
L. hoffmeisteri								
L. maumeensis								
L. udekemianus								
Potamothrix moldaviensis	13	11			32	55	6	11
P. vejdovskyi								
ARTHROPODA								
Cladocera								
Leptodora kindtii	25	44			25	44	13	11
Amphipoda								
Gammarus fasciatus			19	0	19	33		
Decopoda								
Orconectes sp.								
Chironomidae								
Chironomus (chironomus) sp.	109	22	19	19	153	115	13	22
Chironomus pupa								
Cryptochironomus sp.			6	11	19	19		
Polypedilum sp.					6	11		
Procladius sp.	32	40	6	11	70	62	13	22
Procladius pupa								
Pseudochironomus sp.								
Tanypodinae pupa								
Tanytarsus sp.	255	178	140	109	2343	1511	312	224
Tanytarsus pupa								
Ephemeroptera								
Caenis sp.					6	11		
Trichoptera								
Hydropsychidae								
MOLLUSCA								
Gastropoda								
Bulimus sp.								
Pelecypoda								
Amblema plicata								
Sphaerium sp.								
Station Total	936	505	191	134	3361	2368	802	456

Notes: Data presented as no./m^2
Exact sampling dates were June 19 and 20, 1974
Station 20 was drained of all water for construction

ANALYSIS OF BENTHOS SAMPLES FROM LOCUST POINT - June, 1974

TAXA	Station 13		Station 14		Station 15		Station 16	
	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.
COELENTERATA								
Hydra sp. (budding polyp)	6	11					13	11
Hydra sp. (single polyp)	6	11			13	11	19	19
ANNELIDA								
Hirudinea								
Helobdella stagnalis								
Oligochaeta								
Immatures (hair setea)								
Immatures (nohair setea)	108	156	2165	1014	382	354	376	242
Branchyura sowerbyi			19	19				
Limnodrilus cervix					6	11		
L. claparedeanus	19	33	223	40	32	55		
L. claparedeanus-cervix								
L. hoffmeisteri								
L. maumeensis								
L. udekemianus								
Potamothrix moldaviensis	6	11	6	11	6	11	38	51
P. vejdovskyi								
ARTHROPODA								
Cladocera								
Leptodora kindtii	38	51	44	22	64	94	6	11
Amphipoda								
Gammarus fasciatus			6	11				
Decopoda								
Orconectes sp.								
Chironomidae								
Chironomus (chironomus) sp.	32	40	236	86	89	109	63	22
Chironomus pupa								
Cryptochironomus sp.			6	11	6	11		
Polypedilum sp.								
Procladius sp.	19	19	185	48	6	11		
Procladius pupa								
Pseudochironomus sp.								
Tanypodinae pupa								
Tanytarsus sp.	102	67	879	354	847	947	586	160
Tanytarsus pupa								
Ephemeroptera								
Caenis sp.								
Trichoptera								
Hydropsychidae								
MOLLUSCA								
Gastropoda								
Bulimus sp.								
Pelecypoda								
Amblema plicata								
Sphaerium sp.								
Sample Total	337	388	3769	1486	1452	1572	1101	355

Notes: Data presented as no./m^2
Exact sampling dates were June 19 and 20, 1974
Station 20 was drained of all water for construction

ANALYSIS OF BENTHOS SAMPLES FROM LOCUST POINT - June, 1974

TAXA	Station 17		Station 18		Station 19			
	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.
COELENTERATA								
Hydra sp. (budding polyp)			13	22				
Hydra sp. (single polyp)	6	11						
ANNELIDA								
Hirudinea								
Helobdella stagnalis								
Oligochaeta								
Immatures (hair setea)								
Immatures (nohair setea)	338	155	2037	1349	38	19		
Branchyura sowerbyi			19	19				
Limnodrilus cervix			13	11				
L. claparedeanus			102	96				
L. claparedeanus-cervix								
L. hoffmeisteri								
L. maumeensis								
L. udekemianus								
Potamothrix moldaviensis	109	11	64	58				
P. vejdovskyi								
ARTHROPODA								
Cladocera								
Leptodora kindtii	13	11			25	29		
Amphipoda								
Gammarus fasciatus								
Decopoda								
Orconectes sp.								
Chironomidae								
Chironomus (chironomus) sp.	236	156	38	33	25	22		
Chironomus pupa								
Cryptochironomus sp.	6	11						
Polypedilum sp.								
Procladius sp.	25	44	32	40				
Procladius pupa								
Pseudochironomus sp.								
Tanypodinae pupa								
Tanytarsus sp.	2108	1383	720	141	57	58		
Tanytarsus pupa			6	11				
Ephemeroptera								
Caenis sp.			6	11				
Trichoptera								
Hydropsychidae								
MOLLUSCA								
Gastropoda								
Bulimus sp.								
Pelecypoda								
Amblema plicata								
Sphaerium sp.								
Sample Total	2840	1703	3056	1520	146	80		

Notes: Data presented as no./m^2
Exact sampling dates were June 19 and 20, 1974
Station 20 was drained of all water for construction

ANALYSIS OF BENTHOS POPULATIONS AT LOCUST POINT - JULY 17, 1974

TAXA	Station 5		Station 6		Station 7		Station 8	
	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.
COELENTERATA								
Hydra sp. (budding polyp)								
Hydra sp. (single polyp)								
NEMATODEA								
ANNELIDA								
Hirudinea								
Helobdella elongata								
H. stagnalis								
Oligochaeta (unidentified)			6.4	11.0			44.6	77.2
Immatures (hair setae)								
Immatures (no hair setae)	114.6	166.5	108.3	29.2	101.9	96.1	108.2	187.5
Branchyura sowerbyi			6.4	11.0				
Limnodrilus cervix					12.7	22.0		
L. claparedeanus								
L. claparedeanus-cervix								
L. hoffmeisteri								
L. maumeensis								
L. udekemianus					12.7	22.0		
Potamothrix moldaviensis								
P. vejdovskyi								
Stylaria sp.								
ARTHROPODA								
Cladocera								
Leptodora kindtii	6.4	11.0	25.5	11.0	127.3	127.2	171.9	297.8
Amphipoda			12.7	22.0			38.2	38.2
Gammarus fasciatus			12.7	22.0				
Hyalella azteca								
Decopoda								
Orconectes sp.								
Chironomidae								
Chironomus (chironomus) sp.			6.4	11.0	6.4	11.0	38.2	66.2
Chironomus pupa								
Coelotanypus sp.								
Cryptochironomus sp.								
Polypedilum sp.							19.1	19.1
Procladius sp.					6.4	11.0		
Procladius pupa								
Pseudochironomus sp.								
Tanypodinae pupa								
Tanytarsus sp.	6.4	11.0	6.4	11.0			38.2	38.2
Tanytarsus pupa								
Ephemeroptera								
Caenis sp.								
Trichoptera								
Hydropsychidae								
MOLLUSCA								
Gastropoda								
Bulimus sp.								
Pelecypoda								
Amblema plicata			25.5	11.0				
Sphaerium sp.								
Station Total	127.3	159.0	204.0	39.8	267.4	262.6	458.4	681.5

S.D. = Standard Deviation. Data presented as number/m^2.

ANALYSIS OF BENTHOS POPULATIONS AT LOCUST POINT - JULY 17, 1974

TAXA	Station 1		Station 2		Station 3		Station 4	
	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.
COELENTERATA								
Hydra sp. (budding polyp)								
Hydra sp. (single polyp)								
NEMATODEA								
ANNELIDA								
Hirudinea								
Helobdella elongata								
H. stagnalis								
Oligochaeta (unidentified)					261.0	105.2	63.7	55.1
Immatures (hair setae)	6.4	11.0			6.4	11.0	6.4	11.0
Immatures (no hair setae)	31.8	29.2	31.8	22.1	3476.2	1051.5	1642.6	655.9
Branchyura sowerbyi					101.9	86.1	25.5	29.2
Limnodrilus cervix							31.8	55.1
L. claparedeanus					12.7	11.0	50.9	58.4
L. claparedeanus-cervix								
L. hoffmeisteri								
L. maumeensis								
L. udekemianus								
Potamothrix moldaviensis								
P. vejdovskyi								
Stylaria sp.								
ARTHROPODA								
Cladocera								
Leptodora kindtii	82.8	73.3	38.2	50.5	12.7	22.0	63.7	77.2
Amphipoda								
Gammarus fasciatus			6.4	11.0			12.7	11.0
Hyalella azteca								
Decopoda								
Orconectes sp.								
Chironomidae								
Chironomus (chironomus) sp.					108.2	127.2	25.5	29.2
Chironomus pupa								
Coelotanypus sp.								
Cryptochironomus sp.					44.6	22.1		
Polypedilum sp.					12.7	22.0		
Procladius sp.					25.5	11.0	12.7	22.0
Procladius pupa								
Pseudochironomus sp.								
Tanypodinae pupa								
Tanytarsus sp.					337.4	173.3	25.5	22.0
Tanytarsus pupa								
Ephemeroptera								
Caenis sp.	6.4	11.0						
Trichoptera								
Hydropsychidae								
MOLLUSCA								
Gastropoda								
Bulimus sp.								
Pelecypoda								
Amblema plicata								
Sphaerium sp.					6.4	11.0	12.7	11.0
Station Total	127.3	79.5	76.4	33.1	3184.7	2585.8	1910.0	607.3

S.D. = Standard Deviation. Data presented as number/m^2.

ANALYSIS OF BENTHOS POPULATIONS AT LOCUST POINT - JULY 17, 1974

TAXA	Station 9		Station 10		Station 11		Station 12	
	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.
COELENTERATA								
Hydra sp. (budding polyp)								
Hydra sp. (single polyp)								
NEMATODEA								
ANNELIDA								
Hirudinea								
Helobdella elongata								
H. stagnalis								
Oligochaeta (unidentified)	25.5	29.2						
Immatures (hair setae)	19.1	33.1						
Immatures (no hair setae)	742.6	460.1	6.4	11.0	305.6	418.9	407.5	350.3
Branchyura sowerbyi								
Limnodrilus cervix					38.2	66.1	25.5	44.1
L. claparedeanus								
L. claparedeanus-cervix	6.4	11.0						
L. hoffmeisteri							6.4	11.0
L. maumeensis								
L. udekemianus								
Potamothrix moldaviensis	12.7	11.0						
P. vejdovskyi								
Stylaria sp.								
ARTHROPODA								
Cladocera								
Leptodora kindtii	617.6	177.5	44.6	39.8	25.5	44.1		
Amphipoda								
Gammarus fasciatus					70.0	29.2	114.6	95.5
Hyalella azteca								
Decopoda								
Orconectes sp.								
Chironomidae								
Chironomus (chironomus) sp.	6.4	11.0			19.1	33.1		
Chironomus pupa								
Coelotanypus sp.								
Cryptochironomus sp.								
Polypedilum sp.								
Procladius sp.	25.5	11.0						
Procladius pupa								
Pseudochironomus sp.								
Tanypodinae pupa								
Tanytarsus sp.	6.4	11.0			12.7	22.1	12.7	22.1
Tanytarsus pupa								
Ephemeroptera							12.7	22.1
Caenis sp.								
Trichoptera								
Hydropsychidae								
MOLLUSCA								
Gastropoda								
Bulimus sp.								
Pelecypoda								
Amblema plicata								
Sphaerium sp.								
Station Total	1769.9	354.9	50.9	44.1	471.1	539.0	458.0	496.9

S.D. = Standard Deviation. Data presented as number/m^2.

ANALYSIS OF BENTHOS POPULATIONS AT LOCUST POINT - JULY 17, 1974

TAXA	Station 13		Station 14		Station 15		Station 16	
	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.
COELENTERATA								
Hydra sp. (budding polyp)								
Hydra sp. (single polyp)								
NEMATODEA								
ANNELIDA								
Hirudinea								
Helobdella elongata								
H. stagnalis								
Oligochaeta (unidentified)	12.7	22.1	31.8	55.1				
Immatures (hair setae)			6.4	11.0				
Immatures (no hair setae)	789.5	278.3	2355.7	1218.4	872.2	1081.4	700.3	359.0
Branchyura sowerbyi			12.7	11.0	12.7	22.0		
Limnodrilus cervix	12.7	11.0	57.3	83.3	25.8	43.8		
L. claparedeanus			95.5	57.3	44.6	77.2		
L. claparedeanus-cervix					6.4	11.0		
L. hoffmeisteri								
L. maumeensis								
L. udekemianus								
Potamothrix moldaviensis	6.4	11.0	12.7	11.0	6.4	11.0	229.2	76.4
P. vejdovskyi								
Stylaria sp.								
ARTHROPODA								
Cladocera								
Leptodora kindtii	146.4	29.2	152.8	50.5	241.9	61.4	191.0	19.1
Amphipoda								
Gammarus fasciatus								
Hyalella azteca								
Decopoda								
Orconectes so.								
Chironomidae								
Chironomus (chironomus) sp.			25.5	22.0	12.7	22.1	159.1	77.1
Chironomus pupa								
Coelotanypus sp.					6.4	11.0		
Cryptochironomus sp.								
Polypedilum sp.								
Procladius sp.			12.7	11.0	12.7	22.1		
Procladius pupa							6.37	11.0
Pseudochironomus sp.								
Tanypodinae pupa								
Tanytarsus sp.	31.8	22.0	286.5	166.5	216.5	242.4		
Tanytarsus pupa								
Ephemeroptera								
Caenis sp.								
Trichoptera								
Hydropsychidae								
MOLLUSCA								
Gastropoda								
Bulimus sp.								
Pelecypoda								
Amblema plicata							6.37	11.0
Sphaerium sp.								
Station Total	986.8	267.6	3017.8	1522.3	1464.3	1569.7	1292.4	496.0

S.D. = Standard Deviation. Data presented as number/m^2.

ANALYSIS OF BENTHOS POPULATIONS AT LOCUST POINT - JULY 17, 1974

TAXA	Station 17		Station 18		Station 19		Station 20	
	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.
COELENTERATA								
Hydra sp. (budding polyp)								
Hydra sp. (single polyp)								
NEMATODEA								
ANNELIDA								
Hirudinea								
Helobdella elongata								
H. stagnalis								
Oligochaeta (unidentified)								
Immatures (hair setae)								
Immatures (no hair setae)	63.6	61.4	1216.0	800.9	6.3	11.0		
Branchyura sowerbyi								
Limnodrilus cervix								
L. claparedeanus								
L. claparedeanus-cervix								
L. hoffmeisteri								
L. maumeensis								
L. udekemianus								
Potamothrix moldaviensis	44.5	61.4	140.0	39.7				
P. vejdovskyi								
Stylaria sp.								
ARTHROPODA								
Cladocera								
Leptodora kindtii	95.5	38.2	401.1	206.6	133.7	114.6		
Amphipoda								
Gammarus fasciatus								
Hyalella azteca								
Decopoda								
Orconectes sp.								
Chironomidae								
Chironomus (chironomus) sp.	133.7	199.4	12.7	22.0				
Chironomus pupa								
Coelotanypus sp.								
Cryptochironomus sp.								
Polypedilum sp.								
Procladius sp.								
Procladius pupa								
Pseudochironomus sp.								
Tanypodinae pupa								
Tanytarsus sp.					12.7	22.0		
Tanytarsus pupa								
Ephemeroptera								
Caenis sp.								
Trichoptera								
Hydropsychidae								
MOLLUSCA								
Gastropoda								
Bulimus sp.								
Pelecypoda								
Amblema plicata								
Sphaerium sp.								
Station Total	337.4	286.7	1769.9	903.2	152.8	133.7		

S.D. = Standard Deviation. Data presented as number/m^2.

ANALYSIS OF BENTHOS POPULATIONS AT LOCUST POINT - AUGUST 14, 1974

TAXA	Station 1		Station 2		Station 3		Station 4	
	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.
COELENTERATA					12.8	11.0	10.8	18.5
Hydra sp. (budding polyp)					10.8	18.5		
Hydra sp. (single polyp)								
NEMATODEA								
ANNELIDA								
Hirudinea								
Helobdella elongata							6.3	11.0
H. stagnalis								
Oligochaeta (unidentified)			6.3	11.0				
Immatures (hair setae)	445.7	606.6	0.0	0.0	2323.9	634.8	2202.9	1462.2
Immatures (no hair setae)					10.8	18.6	12.8	11.0
Branchyura sowerbyi	10.8	18.6			31.9	39.8	44.6	22.0
Limnodrilus cervix	44.6	77.1			31.9	55.1	95.5	76.4
L. claparedeanus							19.1	33.0
L. claparedeanus-cervix								
L. hoffmeisteri	10.8	18.6						
L. maumeensis								
L. udekemianus	38.2	66.1			25.4	44.1	57.3	33.0
Potamothrix moldaviensis								
P. vejdovskyi								
Stylaria sp.								
ARTHROPODA								
Cladocera			89.1	61.4	70.0	77.1		
Leptodora kindtii								
Amphipoda							6.3	11.0
Gammarus fasciatus	6.3	11.0						
Hyalella azteca								
Decopoda								
Orconectes sp.								
Chironomidae					6.3	11.0	178.2	159.0
Chironomus (chironomus) sp.	25.4	11.0						
Chironomus pupa					44.5	44.1	6.3	11.0
Coelotanypus sp.			6.3	11.0	6.3	11.0		
Cryptochironomus sp.								
Polypedilum sp.					159.1	48.0	121.0	127.1
Procladius sp.								
Procladius pupa								
Pseudochironomus sp.								
Tanypodinae pupa	6.3	11.0			38.2	19.1	12.8	11.0
Tanytarsus sp.								
Tanytarsus pupa								
Ephemeroptera								
Caenis sp.								
Trichoptera								
Hydropsychidae								
MOLLUSCA								
Gastropoda								
Bulimus sp.								
Pelecypoda							6.3	11.0
Amblema plicata								
Sphaerium sp.								
Station Total	592.1	794.2	101.7	72.3	2775.9	574.7	2782.2	1819.7

S.D. = Standard Deviation. Data presented as number/m^2.

ANALYSIS OF BENTHOS POPULATIONS AT LOCUST POINT - AUGUST 14, 1974

TAXA	Station 5		Station 6		Station 7		Station 8	
	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.
COELENTERATA								
Hydra sp. (budding polyp)								
Hydra sp. (single polyp)								
NEMATODEA								
ANNELIDA								
Hirudinea								
Helobdella elongata							6.3	11.0
H. stagnalis								
Oligochaeta (unidentified)								
Immatures (hair setae)			12.8	22.0				
Immatures (no hair setae)	6.3	11.0	6073.8	5575.0	222.8	105.1	127.3	105.1
Branchyura sowerbyi			51.0	22.0	6.3	11.0		
Limnodrilus cervix			203.8	185.6	57.3	57.3	6.3	11.0
L. claparedeanus			82.8	86.1				
L. claparedeanus-cervix								
L. hoffmeisteri								
L. maumeensis								
L. udekemianus								
Potamothrix moldaviensis	12.7	11.0	6.3	11.0			6.3	11.0
P. vejdovskyi								
Stylaria sp.								
ARTHROPODA								
Cladocera								
Leptodora kindtii	31.8	55.1	38.2	50.6	171.9	234.7	31.8	55.1
Amphipoda								
Gammarus fasciatus	6.3	11.0			12.8	22.0	31.9	29.1
Hyalella azteca								
Decopoda								
Orconectes sp.								
Chironomidae								
Chironomus (chironomus) sp.	63.7	11.0	624.0	496.8	57.3	51.0	178.2	276.3
Chironomus pupa								
Coelotanypus sp.			108.2	105.1	17.1	21.4	44.6	61.4
Cryptochironomus sp.							19.1	33.0
Polypedilum sp.								
Procladius sp.			267.4	258.3	31.9	11.0	82.8	61.4
Procladius pupa								
Pseudochironomus sp.								
Tanypodinae pupa								
Tanytarsus sp.	63.7	94.2	146.4	221.0				
Tanytarsus pupa								
Ephemeroptera								
Caenis sp.								
Trichoptera								
Hydropsychidae								
MOLLUSCA								
Gastropoda								
Bulimus sp.								
Pelecypoda								
Amblema plicata					25.4	29.1		
Sphaerium sp.			44.6	77.1				
Station Total	127.3	138.1	7659.1	6318.1	624.0	39.8	534.8	532.4

S.D. = Standard Deviation. Data presented as number/m^2.

ANALYSIS OF BENTHOS POPULATIONS AT LOCUST POINT - AUGUST 14, 1974

TAXA	Station 9		Station 10		Station 11		Station 12	
	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.
COELENTERATA								
Hydra sp. (budding polyp)								
Hydra sp. (single polyp)								
NEMATODEA								
ANNELIDA								
Hirudinea								
Helobdella elongata								
H. stagnalis								
Oligochaeta (unidentified)								
Immatures (hair setae)								
Immatures (no hair setae)	961.3	635.9	57.3	33.0	2234.7	1556.0	31.9	22.0
Branchyura sowerbyi					6.3	11.0		
Limnodrilus cervix	6.3	11.0			140.0	105.1		
L. claparedeanus	44.6	29.1	6.3	11.0	38.2	38.2		
L. claparedeanus-cervix	6.3	11.0						
L. hoffmeisteri					6.3	11.0		
L. maumeensis								
L. udekemianus								
Potamothrix moldaviensis	31.9	11.0	12.8	11.0	12.8	22.0		
P. vejdovskyi								
Stylaria sp.								
ARTHROPODA								
Cladocera								
Leptodora kindtii	44.6	61.4					38.2	50.6
Amphipoda								
Gammarus fasciatus			31.9	55.1	6.3	11.0		
Hyalella azteca								
Decopoda								
Orconectes sp.								
Chironomidae								
Chironomus (chironomus) sp.	152.9	137.8	51.0	55.1	579.4	365.7	31.9	22.0
Chironomus pupa								
Coelotanypus sp.	31.9	29.1			6.3	11.0		
Cryptochironomus sp.								
Polypedilum sp.								
Procladius sp.	63.7	44.1	25.4	29.1	89.1	61.4		
Procladius pupa								
Pseudochironomus sp.								
Tanypodinae pupa								
Tanytarsus sp.					31.9	39.8		
Tanytarsus pupa								
Ephemeroptera								
Caenis sp.								
Trichoptera								
Hydropsychidae								
MOLLUSCA								
Gastropoda								
Bulimus sp.								
Pelecypoda								
Amblema plicata								
Sphaerium sp.								
Station Total	1343.3	658.8	184.9	88.6	3151.6	2088.2	101.9	67.0

S.D. = Standard Deviation. Data presented as number/m^2.

ANALYSIS OF BENTHOS POPULATIONS AT LOCUST POINT - AUGUST 14, 1974

TAXA	Station 17		Station 18		Station 19		Station 20	
	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.
COELENTERATA								
Hydra sp. (budding polyp)								
Hydra sp. (single polyp)								
NEMATODEA								
ANNELIDA								
Hirudinea								
Helobdella elongata								
H. stagnalis								
Oligochaeta (unidentified)								
Immatures (hair setae)								
Immatures (no hair setae)	19.1	33.0	770.3	177.4	51.0	39.8		
Branchyura sowerbyi								
Limnodrilus cervix	6.3	11.0	25.4	29.1	12.8	22.0		
L. claparedeanus			19.1	19.1	51.0	88.2		
L. claparedeanus-cervix								
L. hoffmeisteri								
L. maumeensis								
L. udekemianus								
Potamothrix moldaviensis	31.9	29.1	165.6	155.6				
P. vejdovskyi								
Stylaria sp.								
ARTHROPODA								
Cladocera								
Leptodora kindtii			6.3	11.0				
Amphipoda								
Gammarus fasciatus								
Hyalella azteca								
Decopoda								
Orconectes sp.								
Chironomidae								
Chironomus (chironomus) sp.	25.4	29.1	1152.3	466.4	133.8	101.0		
Chironomus pupa								
Coelotanypus sp.								
Cryptochironomus sp.	19.1	19.1	38.2	19.1				
Polypedilum sp.								
Procladius sp.			6.3	11.0	12.8	11.0		
Procladius pupa								
Pseudochironomus sp.								
Tanypodinae pupa								
Tanytarsus sp.								
Tanytarsus pupa								
Ephemeroptera								
Caenis sp.								
Trichoptera								
Hydropsychidae								
MOLLUSCA								
Gastropoda								
Bulimus sp.								
Pelecypoda								
Amblema plicata								
Sphaerium sp.								
Station Total	101.9	86.1	2183.8	747.0	261.0	110.2		

S.D. = Standard Deviation. Data presented as number/m^2.

ANALYSIS OF BENTHOS POPULATIONS AT LOCUST POINT - AUGUST 14, 1974

TAXA	Station 13		Station 14		Station 15		Station 16	
	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.
COELENTERATA								
Hydra sp. (budding polyp)								
Hydra sp. (single polyp)								
NEMATODEA								
ANNELIDA								
Hirudinea								
Helobdella elongata								
H. stagnalis					6.3	11.0	6.3	11.0
Oligochaeta (unidentified)								
Immatures (hair setae)								
Immatures (no hair setae)	31.9	55.1	3266.1	1744.4	916.9	398.9	611.2	83.2
Branchyura sowerbyi			6.3	11.0	31.9	29.1		
Limnodrilus cervix			101.9	130.0	76.4	57.3	19.1	19.1
L. claparedeanus								
L. claparedeanus-cervix								
L. hoffmeisteri								
L. maumeensis								
L. udekemianus								
Potamothrix moldaviensis			12.8	22.0	12.8	11.0	165.6	79.6
P. vejdovskyi								
Stylaria sp.								
ARTHROPODA								
Cladocera								
Leptodora kindtii	31.9	39.8	140.0	67.0	44.6	44.1	25.4	22.0
Amphipoda								
Gammarus fasciatus	6.3	11.0	6.3	11.0				
Hyalella azteca								
Decopoda								
Orconectes sp.								
Chironomidae								
Chironomus (chironomus) sp.	12.8	11.0	127.3	138.1	140.0	58.3	242.0	252.1
Chironomus pupa								
Coelotanypus sp.			57.3	33.0	63.7	48.0	6.3	11.0
Cryptochironomus sp.			25.4	44.1			38.2	19.1
Polypedilum sp.								
Procladius sp.	6.3	11.0	127.3	22.0	95.6	68.9		
Procladius pupa							6.3	11.0
Pseudochironomus sp.								
Tanypodinae pupa								
Tanytarsus sp.			19.1	33.0			6.3	11.0
Tanytarsus pupa								
Ephemeroptera								
Caenis sp.								
Trichoptera								
Hydropsychidae								
MOLLUSCA								
Gastropoda								
Bulimus sp.								
Pelecypoda								
Amblema plicata								
Sphaerium sp.								
Station Total	89.1	105.1	3890.0	2075.3	1388.0	289.2	1127.0	303.2

S.D. = Standard Deviation. Data presented as number/m^2.

ANALYSIS OF BENTHOS POPULATIONS AT LOCUST POINT - SEPTEMBER 6, 1974

TAXA	Station 5		Station 6		Station 7		Station 8	
	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.
COELENTERATA								
Hydra sp. (budding polyp)					6.3	11.0		
Hydra sp. (single polyp)			31.9	29.1	25.4	22.0		
NEMATODEA								
ANNELIDA								
Hirudinea							44.6	48.0
Helobdella elongata								
H. stagnalis								
Oligochaeta (unidentified)								
Immatures (hair setae)								
Immatures (no hair setae)	51.0	44.1	146.4	155.3	490.2	466.4	573.0	193.9
Branchyura sowerbyi					63.7	58.3	31.9	11.0
Limnodrilus cervix					6.3	11.0	6.3	11.0
L. claparedeanus							31.9	39.8
L. claparedeanus-cervix	6.3	11.0					12.8	11.0
L. hoffmeisteri							6.3	11.0
L. maumeensis								
L. udekemianus								
Potamothrix moldaviensis								
P. vejdovskyi								
Stylaria sp.								
ARTHROPODA								
Cladocera								
Leptodora kindtii	38.2	19.1			25.4	29.1	6.3	11.0
Amphipoda								
Gammarus fasciatus			12.8	11.0	82.8	29.1	44.5	48.0
Hyalella azteca								
Decopoda								
Orconectes sp.								
Chironomidae								
Chironomus (chironomus) sp.	12.8	11.0	197.3	193.2	101.9	88.2	57.3	33.0
Chironomus pupa			12.8	22.0	6.3	11.0		
Coelotanypus sp.								
Cryptochironomus sp.								
Polypedilum sp.			6.3	11.0	6.3	11.0	12.8	11.0
Procladius sp.								
Procladius pupa								
Pseudochironomus sp.								
Tanypodinae pupa								
Tanytarsus sp.	6.3	11.0	38.2	19.1	19.1	19.1	528.4	423.0
Tanytarsus pupa								
Ephemeroptera								
Caenis sp.								
Trichoptera								
Hydropsychidae								
MOLLUSCA								
Gastropoda								
Bulimus sp.								
Pelecypoda								
Amblema plicata							31.9	22.0
Sphaerium sp.								
Station Total	114.7	68.9	477.6	381.6	834.0	568.0	1394.3	445.0

S.D. = Standard Deviation. Data presented as number/m^2.

ANALYSIS OF BENTHOS POPULATIONS AT LOCUST POINT - SEPTEMBER 6, 1974

TAXA	Station 1		Station 2		Station 3		Station 4	
	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.
COELENTERATA								
Hydra sp. (budding polyp)								
Hydra sp. (single polyp)								
NEMATODEA								
ANNELIDA								
Hirudinea								
Helobdella elongata								
H. stagnalis								
Oligochaeta (unidentified)								
Immatures (hair setae)								
Immatures (no hair setae)	31.9	29.1	101.9	67.0	534.9	220.2	1165.1	978.2
Branchyura sowerbyi							44.6	48.0
Limnodrilus cervix							31.9	39.8
L. claparedeanus					6.3	11.0	6.3	11.0
L. claparedeanus-cervix							19.1	19.1
L. hoffmeisteri								
L. maumeensis					6.3	11.0	6.3	11.0
L. udekemianus								
Potamothrix moldaviensis							12.8	11.0
P. vejdovskyi								
Stylaria sp.								
ARTHROPODA								
Cladocera								
Leptodora kindtii			114.7	58.9	292.9	241.9	127.3	171.9
Amphipoda								
Gammarus fasciatus			6.3	11.0				
Hyalella azteca								
Decopoda								
Orconectes sp.								
Chironomidae								
Chironomus (chironomus) sp.	31.9	39.8	19.1	19.1			38.2	56.1
Chironomus pupa								
Coelotanypus sp.								
Cryptochironomus sp.	6.3	11.0					6.3	11.0
Polypedilum sp.								
Procladius sp.					6.3	11.0	19.1	19.1
Procladius pupa								
Pseudochironomus sp.			12.7	22.0				
Tanypodinae pupa								
Tanytarsus sp.	12.8	22.0	12.7	22.0	343.9	156.3	261.0	187.4
Tanytarsus pupa								
Ephemeroptera								
Caenis sp.			6.3	11.0				
Trichoptera								
Hydropsychidae								
MOLLUSCA								
Gastropoda								
Bulimus sp.								
Pelecypoda								
Amblema plicata								
Sphaerium sp.								
Station Total	82.8	48.0	273.8	112.0	1190.6	393.4	1738.1	1506.8

S.D. = Standard Deviation. Data presented as number/m^2.

ANALYSIS OF BENTHOS POPULATIONS AT LOCUST POINT - SEPTEMBER 6, 1974

TAXA	Station 13		Station 14		Station 15		Station 16	
	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.
COELENTERATA								
Hydra sp. (budding polyp)								
Hydra sp. (single polyp)					6.3	11.0		
NEMATODEA								
ANNELIDA								
Hirudinea								
Helobdella elongata								
H. stagnalis								
Oligochaeta (unidentified)								
Immatures (hair setae)								
Immatures (no hair setae)	942.2	535.2	4004.7	912.0	222.9	124.2	1407.0	303.4
Branchyura sowerbyi	6.3	11.0	19.1	33.0				
Limnodrilus cervix	12.8	22.0	127.3	105.1				
L. claparedeanus	6.3	11.0	19.1	19.1				
L. claparedeanus-cervix	12.8	22.0	6.3	11.0				
L. hoffmeisteri								
L. maumeensis								
L. udekemianus								
Potamothrix moldaviensis			6.3	11.0			63.7	11.0
P. vejdovskyi								
Stylaria sp.								
ARTHROPODA								
Cladocera								
Leptodora kindtii	522.0	258.0	471.1	293.7	477.3	281.3	6.3	11.0
Amphipoda								
Gammarus fasciatus			6.3	11.0	12.8	22.0		
Hyalella azteca								
Decopoda								
Orconectes sp.								
Chironomidae								
Chironomus (chironomus) sp.	299.2	238.9	172.0	144.2			38.2	38.2
Chironomus pupa								
Coelotanypus sp.			6.3	11.0			12.8	11.0
Cryptochironomus sp.			12.8	11.0	6.3	11.0		
Polypedilum sp.								
Procladius sp.	6.3	11.0	6.3	11.0			19.1	19.1
Procladius pupa								
Pseudochironomus sp.								
Tanypodinae pupa								
Tanytarsus sp.	19.1	33.0	146.4	105.1	114.7	33.0	51.0	44.1
Tanytarsus pupa								
Ephemeroptera								
Caenis sp.								
Trichoptera								
Hydropsychidae								
MOLLUSCA								
Gastropoda								
Bulimus sp.								
Pelecypoda								
Amblema plicata								
Sphaerium sp.							6.3	11.0
Station Total	1827.2	474.3	5004.2	813.2	840.4	319.0	1820.9	358.3

S.D. = Standard Deviation. Data presented as number/m^2.

ANALYSIS OF BENTHOS POPULATIONS
AT LOCUST POINT - SEPTEMBER 6, 1974

TAXA	Station 9		Station 10		Station 11		Station 12	
	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.
COELENTERATA								
Hydra sp. (budding polyp)	6.3	11.0						
Hydra sp. (single polyp)	6.3	11.0						
NEMATODEA								
ANNELIDA								
Hirudinea								
Helobdella elongata								
H. stagnalis								
Oligochaeta (unidentified)								
Immatures (hair setae)								
Immatures (no hair setae)	694.0	316.3	44.6	11.0	269.2	127.1	458.4	325.9
Branchyura sowerbyi			6.3	11.0				
Limnodrilus cervix							6.3	11.0
L. claparedeanus	12.8	11.0			6.3	11.0		
L. claparedeanus-cervix	6.3	11.0					6.3	11.0
L. hoffmeisteri								
L. maumeensis								
L. udekemianus								
Potamothrix moldaviensis	6.3	11.0			44.6	29.1	3.3	11.0
P. vejdovskyi								
Stylaria sp.	6.3	11.0						
ARTHROPODA								
Cladocera								
Leptodora kindtii	1324.2	363.5	25.4	11.0	19.1	19.1	31.9	29.1
Amphipoda							25.4	29.1
Gammarus fasciatus								
Hyalella azteca								
Decopoda								
Orconectes sp.								
Chironomidae								
Chironomus (chironomus) sp.	140.0	55.1	25.4	29.1			44.6	22.0
Chironomus pupa								
Coelotanypus sp.							6.3	11.0
Cryptochironomus sp.								
Polypedilum sp.								
Procladius sp.	51.1	29.1	6.3	11.0				
Procladius pupa								
Pseudochironomus sp.								
Tanypodinae pupa								
Tanytarsus sp.	1910.0	607.3	19.1	33.0			57.3	57.3
Tanytarsus pupa								
Ephemeroptera								
Caenis sp.								
Trichoptera								
Hydropsychidae								
MOLLUSCA								
Gastropoda								
Bullmus sp.								
Pelecypoda								
Amblema plicata								
Sphaerium sp.								
Station Total	4563.9	1500.3	127.3	55.1	439.3	172.0	643.0	408.4

S.D. = Standard Deviation. Data presented as number/m^2.

ANALYSIS OF BENTHOS POPULATIONS AT LOCUST POINT - OCTOBER 10, 1974

TAXA	Station 1		Station 2		Station 3		Station 4	
	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.
COELENTERATA								
Hydra sp. (budding polyp)					6.4	11.0	12.7	22.0
Hydra sp. (single polyp)					38.2	33.0	19.1	19.1
NEMATODEA								
ANNELIDA								
Hirudinea								
Helobdella elongata							6.4	11.0
H. stagnalis								
Oligochaeta (unidentified)								
Immatures (hair setae)	95.6	57.3	210.1	252.7	1808.2	487.9	2546.7	704.3
Immatures (no hair setae)							19.1	19.1
Branchyura sowerbyi					6.4	11.0		
Limnodrilus cervix							25.4	22.0
L. claparedeanus								
L. claparedeanus-cervix								
L. hoffmeisteri								
L. maumeensis								
L. udekemianus								
Potamothrix moldaviensis					12.8	11.0		
Nais sp.					6.4	11.0		
Stylaria sp.								
ARTHROPODA								
Cladocera					44.6	39.8	51.0	39.8
Leptodora kindtii							6.4	11.0
Amphipoda	19.1	19.1	19.1	0.0				
Gammarus fasciatus								
Hyalella azteca								
Decopoda								
Orconectes sp.								
Chironomidae			12.7	22.0	82.8	143.3	280.1	242.6
Chironomus (chironomus) sp.								
Chironomus pupa					31.9	29.1		
Coelotanypus sp.					19.1	33.0		
Cryptochironomus sp.								
Polypedilum sp.					76.4	50.6	25.4	11.0
Procladius sp.								
Procladius pupa								
Pseudochironomus sp.								
Tanypodinae pupa	467.8	58.3	280.1	485.2	764.0	202.1	560.2	435.7
Tanytarsus sp.								
Tanytarsus pupa							6.4	11.0
Ephemeroptera								
Caenis sp.								
Trichoptera								
Hydropsychidae								
MOLLUSCA								
Gastropoda								
Bulimus sp.								
Pelecypoda								
Amblema plicata				6.4	11.0			
Sphaerium sp.								
Station Total	579.3	112.0	528.4	767.9	2903.2	606.4	3737.2	985.3

S.D. = Standard Deviation. Data presented as number/m^2.

ANALYSIS OF BENTHOS POPULATIONS AT LOCUST POINT - SEPTEMBER 6, 1974

TAXA	Station 17		Station 18		Station 19		Station 20	
	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.
COELENTERATA								
Hydra sp. (budding polyp)								
Hydra sp. (single polyp)								
NEMATODEA								
ANNELIDA								
Hirudinea								
Helobdella elongata								
H. stagnalis								
Oligochaeta (unidentified)								
Immatures (hair setae)								
Immatures (no hair setae)	121.0	39.8	6570.4	1032.0	57.3	50.5		
Branchyura sowerbyi			51.0	11.0				
Limnodrilus cervix			146.4	67.0	63.7	61.4		
L. claparedeanus			121.0	72.3				
L. claparedeanus-cervix			184.7	29.1				
L. hoffmeisteri								
L. maumeensis								
L. udekemianus								
Potamothrix moldaviensis	38.2	33.0	31.9	55.1				
P. vejdovskyi								
Stylaria sp.								
ARTHROPODA								
Cladocera								
Leptodora kindtii	25.4	29.1			19.1	33.0		
Amphipoda								
Gammarus fasciatus								
Hyalella azteca								
Decopoda								
Orconectes sp.								
Chironomidae								
Chironomus (chironomus) sp.	25.4	11.0	51.0	11.0	25.4	29.1		
Chironomus pupa								
Coelotanypus sp.								
Cryptochironomus sp.			6.3	11.0				
Polypedilum sp.								
Procladius sp.			6.3	11.0	6.3	11.0		
Procladius pupa								
Pseudochironomus sp.								
Tanypodinae pupa								
Tanytarsus sp.			6.3	11.0	294.8	124.2		
Tanytarsus pupa								
Ephemeroptera								
Caenis sp.								
Trichoptera								
Hydropsychidae								
MOLLUSCA								
Gastropoda								
Bulimus sp.								
Pelecypoda								
Amblema plicata								
Sphaerium sp.								
Station Total	210.1	19.1	7175.2	948.3	566.7	67.0		

S.D. = Standard Deviation. Data presented as number/m^2.

ANALYSIS OF BENTHOS POPULATIONS AT LOCUST POINT - OCTOBER 10, 1974

TAXA	Station 5		Station 6		Station 7		Station 8	
	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.
COELENTERATA								
Hydra sp. (budding polyp)					6.3	11.0		
Hydra sp. (single polyp)			6.3	11.0				
NEMATODEA								
ANNELIDA								
Hirudinea								
Helobdella elongata								
H. stagnalis			6.3	11.0				
Oligochaeta (unidentified)								
Immatures (hair setae)	1725.3	358.5	1095.0	699.2	312.0	312.0	1107.9	646.9
Immatures (no hair setae)			127.3	108.6	31.9	39.8	44.5	11.0
Branchyura sowerbyi	12.8	11.0						
Limnodrilus cervix	12.8	22.0	19.1	33.0			6.3	11.0
L. claparedeanus								
L. claparedeanus-cervix								
L. hoffmeisteri								
L. maumeensis								
L. udekemianus								
Potamothrix moldaviensis	31.9	39.8						
Nais sp.					6.3	11.0		
Stylaria sp.								
ARTHROPODA								
Cladocera								
Leptodora kindtii	6.3	11.0			12.8	11.0		
Amphipoda								
Gammarus fasciatus	6.3	11.0			44.6	61.4	133.8	83.2
Hyalella azteca								
Decopoda								
Orconectes sp.								
Chironomidae								
Chironomus (chironomus) sp.	38.2	66.1	70.0	67.0	12.8	22.0	82.8	72.3
Chironomus pupa								
Coelotanypus sp.	44.6	11.0	38.2	50.6			12.8	22.0
Cryptochironomus sp.			6.3	11.0	6.3	11.0		
Polypedilum sp.			12.7	11.0			6.3	11.0
Procladius sp.								
Procladius pupa								
Pseudochironomus sp.								
Tanypodinae pupa	25.4	44.1	31.9	55.1	38.2	50.6	44.6	39.8
Tanytarsus sp.								
Tanytarsus pupa								
Ephemeroptera								
Caenis sp.								
Trichoptera								
Hydropsychidae								
MOLLUSCA								
Gastropoda								
Bulimus sp.								
Pelecypoda							6.3	11.0
Amblema plicata								
Sphaerium sp.								
Station Total	1903.7	328.8	1413.4	782.1	471.1	249.2	1445.2	553.7

S.D. = Standard Deviation. Data presented as number/m^2.

ANALYSIS OF BENTHOS POPULATIONS AT LOCUST POINT - OCTOBER 10, 1974

TAXA	Station 9		Station 10		Station 11		Station 12	
	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.
COELENTERATA								
Hydra sp. (budding polyp)	63.7	110.2					12.8	22.0
Hydra sp. (single polyp)	121.0	112.0					47.8	40.6
NEMATODEA								
ANNELIDA								
Hirudinea							31.9	55.1
Helobdella elongata							6.3	11.0
H. stagnalis	12.8	22.0						
Oligochaeta (unidentified)							6.3	11.0
Immatures (hair setae)							222.9	238.9
Immatures (no hair setae)	885.0	488.7	127.3	138.1	76.4	33.0		
Branchyura sowerbyi					6.3	11.0		
Limnodrilus cervix			6.3	11.0				
L. claparedeanus	6.3	11.0			6.3	11.0		
L. claparedeanus-cervix	6.3	11.0						
L. hoffmeisteri								
L. maumeensis								
L. udekemianus								
Potamothrix moldaviensis								
Nais sp.								
Stylaria sp.	101.9	127.1					12.8	22.0
ARTHROPODA								
Cladocera								
Leptodora kindtii	89.1	48.0			6.3	11.0		
Amphipoda								
Gammarus fasciatus	25.4	44.1	12.8	22.0			133.8	215.2
Hyalella azteca								
Decopoda								
Orconectes sp.								
Chironomidae								
Chironomus (chironomus) sp.	44.6	61.4	6.3	11.0			76.4	19.1
Chironomus pupa								
Coelotanypus sp.								
Cryptochironomus sp.	6.3	11.0	6.3	11.0				
Polypedilum sp.								
Procladius sp.	6.3	11.0						
Procladius pupa								
Pseudochironomus sp.								
Tanypodinae pupa								
Tanytarsus sp.	267.4	353.8	19.1	19.1	6.3	11.0	19.1	33.0
Tanytarsus pupa								
Ephemeroptera								
Caenis sp.								
Trichoptera								
Hydropsychidae								
MOLLUSCA								
Gastropoda								
Bulimus sp.								
Pelecypoda								
Amblema plicata	6.3	11.0						
Sphaerium sp.			6.3	11.0				
Station Total	1642.7	906.7	184.7	140.8	101.9	29.1	560.2	543.3

S.D. = Standard Deviation. Data presented as number/m^2.

ANALYSIS OF BENTHOS POPULATIONS AT LOCUST POINT - OCTOBER 10, 1974

TAXA	Station 13		Station 14		Station 15		Station 16	
	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.
COELENTERATA								
Hydra sp. (budding polyp)								
Hydra sp. (single polyp)			12.8	11.0				
NEMATODEA								
ANNELIDA								
Hirudinea								
Helobdella elongata								
H. stagnalis								
Oligochaeta (unidentified)								
Immatures (hair setae)	25.4	44.1	44.6	11.0	6.3	11.0		
Immatures (no hair setae)	191.0	152.9	2841.1	353.8	1604.4	1191.6	611.2	334.0
Branchyura sowerbyi			12.8	22.0				
Limnodrilus cervix			12.8	22.0	12.8	22.0		
L. claparedeanus								
L. claparedeanus-cervix			76.4	68.9	6.3	11.0	6.3	11.0
L. hoffmeisteri								
L. maumeensis								
L. udekemianus								
Potamothrix moldaviensis							114.6	33.0
Nais sp.							6.3	11.0
Stylaria sp.								
ARTHROPODA								
Cladocera								
Leptodora kindtii	31.9	39.8	6.3	11.0				
Amphipoda								
Gammarus fasciatus	6.3	11.0	12.8	11.0				
Hyalella azteca								
Decopoda								
Orconectes sp.								
Chironomidae								
Chironomus (chironomus) sp.	38.2	66.1	70.0	61.4	31.9	55.1		
Chironomus pupa								
Coelotanypus sp.			25.1	29.1	6.3	11.0		
Cryptochironomus sp.	6.3	11.0	63.7	29.1	19.1	19.1	6.3	11.0
Polypedilum sp.								
Procladius sp.			89.1	48.0	12.8	22.0	6.3	11.0
Procladius pupa								
Pseudochironomus sp.								
Tanypodinae pupa								
Tanytarsus sp.	38.2	33.0	420.2	191.0			51.0	39.8
Tanytarsus pupa								
Ephemeroptera								
Caenis sp.								
Trichoptera								
Hydropsychidae								
MOLLUSCA								
Gastropoda								
Bulimus sp.								
Pelecypoda								
Amblema plicata								
Sphaerium sp.								
Station Total	337.4	162.4	3444.3	1104.6	1700.0	1241.0	802.2	364.4

S.D. = Standard Deviation. Data presented as number/m^2.

ANALYSIS OF BENTHOS POPULATIONS AT LOCUST POINT - OCTOBER 10, 1974

TAXA	Station 17		Station 18		Station 19		Station 20	
	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.
COELENTERATA								
Hydra sp. (budding polyp)								
Hydra sp. (single polyp)								
NEMATODEA			6.3	11.0				
ANNELIDA								
Hirudinea								
Helobdella elongata								
H. stagnalis								
Oligochaeta (unidentified)								
Immatures (hair setae)								
Immatures (no hair setae)	292.9	121.3	751.2	245.6	19.1	19.1		
Branchyura sowerbyi					19.1	33.0		
Limnodrilus cervix								
L. claparedeanus			6.3	11.0				
L. claparedeanus-cervix			6.3	11.0				
L. hoffmeisteri								
L. maumeensis								
L. udekemianus								
Potamothrix moldaviensis	19.1	33.0	44.6	39.8				
Nais sp.								
Stylaria sp.								
ARTHROPODA								
Cladocera								
Leptodora kindtii			12.8	11.0				
Amphipoda								
Gammarus fasciatus								
Hyalella azteca								
Decopoda								
Orconectes sp.								
Chironomidae								
Chironomus (chironomus) sp.								
Chironomus pupa								
Coelotanypus sp.								
Cryptochironomus sp.	12.8	22.0	12.8	11.0				
Polypedilum sp.								
Procladius sp.								
Procladius pupa								
Pseudochironomus sp.								
Tanypodinae pupa								
Tanytarsus sp.	6.3	11.0						
Tanytarsus pupa								
Ephemeroptera								
Caenis sp.								
Trichoptera								
Hydropsychidae								
MOLLUSCA								
Gastropoda								
Bulimus sp.								
Pelecypoda								
Amblema plicata								
Sphaerium sp.								
Station Total	331.0	154.3	840.4	252.7	38.2	50.6		

S.D. = Standard Deviation. Data presented as number/m^2.

ANALYSIS OF BENTHOS POPULATIONS AT LOCUST POINT - NOVEMBER 7, 1974

TAXA	Station 1		Station 2		Station 3		Station 4	
	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.
COELENTERATA								
Hydra sp. (budding polyp)							44.6	61.4
Hydra sp. (single polyp)					6.4	11.0	57.3	38.2
NEMATODEA								
ANNELIDA								
Hirudinea								
Helobdella elongata								
H. stagnalis	6.4	11.0						
Oligochaeta (unidentified)								
Immatures (hair setae)								
Immatures (no hair setae)	127.3	122.8	108.2	86.1	2935.0	2966.0	1489.8	949.1
Branchyura sowerbyi					76.4	19.1	70.0	29.2
Limnodrilus cervix					70.0	105.2		
L. claparedeanus	19.1	19.1			19.1	33.1		
L. claparedeanus-cervix					25.5	44.1		
L. hoffmeisteri								
L. maumeensis								
Nais sp.								
Potamothrix moldaviensis								
P. vejdovskyi								
Stylaria sp.								
ARTHROPODA								
Cladocera								
Leptodora kindtii								
Amphipoda								
Gammarus fasciatus	31.8	55.1	63.7	79.5	6.4	11.0	3.4	11.0
Hyalella azteca								
Decopoda								
Orconectes sp.								
Chironomidae								
Chironomus (chironomus) sp.			25.5	11.0	25.5	22.1		
Cricotopus sp.							19.1	19.1
Coelotanypus sp.								
Cryptochironomus sp.	12.7	22.1			19.1	0.0	12.7	11.0
Polypedilum sp.								
Procladius sp.			6.4	11.0	38.2	33.1		
Procladius pupa								
Pseudochironomus sp.								
Tanypodinae pupa								
Tanytarsus sp.	6.4	11.0			25.5	29.2	19.1	0.0
Tanytarsus pupa								
Ephemeroptera								
Caenis sp.	6.4	11.0	6.4	11.0			6.4	11.0
Trichoptera								
Hydropsychidae								
MOLLUSCA								
Gastropoda								
Bulimus sp.								
Pelecypoda								
Amblema plicata								
Sphaerium sp.							19.1	19.1
Station Total	210.1	199.4	210.1	136.5	3247.0	3184.8	1744.5	1032.3

S.D. = Standard Deviation. Data presented as number/m^2.

ANALYSIS OF BENTHOS POPULATIONS AT LOCUST POINT - NOVEMBER 7, 1974

TAXA	Station 5		Station 6		Station 7		Station 8	
	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.
COELENTERATA								
Hydra sp. (budding polyp)								
Hydra sp. (single polyp)					25.5	44.1		
NEMATODEA								
ANNELIDA								
Hirudinea								
Helobdella elongata								
H. stagnalis								
Oligochaeta (unidentified)								
Immatures (hair setae)								
Immatures (no hair setae)	6.4	11.0	286.5	257.0	165.5	72.3	369.3	164.7
Branchyura sowerbyi			44.6	48.1	12.7	22.1	19.1	19.1
Limnodrilus cervix							6.4	11.0
L. claparedeanus								
L. claparedeanus-cervix								
L. hoffmeisteri								
L. maumeensis								
Nais sp.								
Potamothrix moldaviensis								
P. vejdovskyi								
Stylaria sp.								
ARTHROPODA								
Cladocera								
Leptodora kindtii								
Amphipoda								
Gammarus fasciatus			76.4	57.3	38.2	19.1	178.3	90.3
Hyalella azteca								
Decopoda								
Orconectes sp.								
Chironomidae								
Chironomus (chironomus) sp.			38.2	33.1			89.1	138.2
Cricotopus sp.								
Coelotanypus sp.								
Cryptochironomus sp.	19.1	19.1	50.9	29.2			25.5	29.2
Polypedilum sp.								
Procladius sp.					6.4	11.0	6.4	11.0
Procladius pupa								
Pseudochironomus sp.								
Tanypodinae pupa								
Tanytarsus sp.	6.4	11.0	12.7	22.1	6.4	11.0	57.3	99.3
Tanytarsus pupa								
Ephemeroptera								
Caenis sp.			6.4	11.0				
Trichoptera								
Hydropsychidae								
MOLLUSCA								
Gastropoda								
Bulimus sp.								
Pelecypoda								
Amblema plicata								
Sphaerium sp.			31.8	39.8				
Station Total	31.8	22.1	547.5	357.5	254.7	148.4	751.3	287.4

S.D. = Standard Deviation. Data presented as number/m^2.

ANALYSIS OF BENTHOS POPULATIONS AT LOCUST POINT - NOVEMBER 7, 1974

TAXA	Station 9		Station 10		Station 11		Station 12	
	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.
COELENTERATA								
Hydra sp. (budding polyp)	6.4	11.0					31.8	55.1
Hydra sp. (single polyp)							63.7	110.3
NEMATODEA								
ANNELIDA								
Hirudinea								
Helobdella elongata								
H. stagnalis								
Oligochaeta (unidentified)								
Immatures (hair setae)								
Immatures (no hair setae)	1999.1	1262.7	31.8	11.0	464.8	723.9	789.5	1172.8
Branchyura sowerbyi					25.5	44.1		
Limnodrilus cervix								
L. claparedeanus								
L. claparedeanus-cervix	31.8	11.0			31.8	55.1		
L. hoffmeisteri					12.7	11.0		
L. maumeensis								
Nais sp.								
Potamothrix moldaviensis								
P. vejdovskyi								
Stylaria sp.								
ARTHROPODA								
Cladocera								
Leptodora kindtii	6.4	11.0						
Amphipoda								
Gammarus fasciatus	12.7	22.1			12.7	11.0	203.7	210.4
Hyalella azteca								
Decopoda								
Orconectes sp.								
Chironomidae								
Chironomus (chironomus) sp.			6.4	11.0	25.5	29.2	31.8	11.0
Cricotopus sp.								
Coelotanypus sp.								
Cryptochironomus sp.	25.5	44.1			6.4	11.0	6.4	11.0
Polypedilum sp.								
Procladius sp.	12.7	11.0			6.4	11.0	6.4	11.0
Procladius pupa								
Pseudochironomus sp.								
Tanypodinae pupa								
Tanytarsus sp.							12.7	11.0
Tanytarsus pupa								
Ephemeroptera								
Caenis sp.							6.4	11.0
Trichoptera								
Hydropsychidae								
MOLLUSCA								
Gastropoda								
Bulimus sp.								
Pelecypoda								
Amblema plicata								
Sphaerium sp.							6.4	11.0
Station Total	2094.6	1224.8	38.2	19.1	585.7	868.2	1158.7	1573.2

S.D. = Standard Deviation. Data presented as number/m^2.

ANALYSIS OF BENTHOS POPULATIONS AT LOCUST POINT - NOVEMBER 7, 1974

TAXA	Station 13		Station 14		Station 15		Station 16	
	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.
COELENTERATA								
Hydra sp. (budding polyp)			12.7	22.1	12.7	22.1	6.4	11.0
Hydra sp. (single polyp)			6.4	11.0	31.8	39.8		
NEMATODEA								
ANNELIDA								
Hirudinea								
Helobdella elongata								
H. stagnalis								
Oligochaeta (unidentified)					25.5	22.1		
Immatures (hair setae)								
Immatures (no hair setae)	1311.5	1083.2	2400.2	964.9	515.7	262.6	235.6	159.0
Branchyura sowerbyi			31.8	29.2				
Limnodrilus cervix	63.7	110.3	31.8	29.2			12.7	22.1
L. claparedeanus	25.5	44.1	57.3	19.1				
L. claparedeanus-cervix	31.8	55.1	50.9	22.1				
L. hoffmeisteri								
L. maumeensis					89.1	67.1		
Nais sp.								
Potamothrix moldaviensis								
P. vejdovskyi								
Stylaria sp.								
ARTHROPODA								
Cladocera								
Leptodora kindtii								
Amphipoda								
Gammarus fasciatus	6.4	11.0	44.6	61.4	6.4	11.0		
Hyalella azteca								
Decopoda								
Orconectes sp.								
Chironomidae								
Chironomus (chironomus) sp.	19.1	0.0	95.5	68.9	31.8	39.8		
Cricotopus sp.								
Coelotanypus sp.			25.5	29.2				
Cryptochironomus sp.	19.1	33.1	44.6	22.1	6.4	11.0		
Polypedilum sp.								
Procladius sp.	6.4	11.0	483.9	408.0				
Procladius pupa								
Pseudochironomus sp.								
Tanypodinae pupa								
Tanytarsus sp.	6.4	11.0	999.6	529.8	19.1	19.1		
Tanytarsus pupa								
Ephemeroptera					6.4	11.0		
Caenis sp.								
Trichoptera								
Hydropsychidae								
MOLLUSCA								
Gastropoda								
Bulimus sp.								
Pelecypoda								
Amblema plicata			6.4	11.0				
Sphaerium sp.								
Station Total	1489.8	1319.3	4291.1	1799.5	744.9	380.6	254.7	177.5

S.D. = Standard Deviation. Data presented as number/m^2.

ANALYSIS OF BENTHOS POPULATIONS AT LOCUST POINT - NOVEMBER 7, 1974

TAXA	Station 17		Station 18		Station 19		Station 20	
	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.
COELENTERATA								
Hydra sp. (budding polyp)								
Hydra sp. (single polyp)			12.7	11.0				
NEMATODEA								
ANNELIDA								
Hirudinea								
Helobdella elongata								
H. stagnalis								
Oligochaeta (unidentified)								
Immatures (hair setae)								
Immatures (no hair setae)	70.0	58.4	935.9	569.5				
Branchyura sowerbyi								
Limnodrilus cervix								
L. claparedeanus								
L. claparedeanus-cervix			44.6	29.2				
L. hoffmeisteri								
L. maumeensis								
Nais sp.								
Potamothrix moldaviensis								
P. vejdovskyi								
Stylaria sp.								
ARTHROPODA								
Cladocera								
Leptodora kindtii								
Amphipoda								
Gammarus fasciatus								
Hyalella azteca								
Decopoda								
Orconectes sp.								
Chironomidae								
Chironomus (chironomus) sp.	6.4	11.0	31.8	29.2				
Cricotopus sp.								
Coelotanypus sp.								
Cryptochironomus sp.			70.0	44.1				
Polypedilum sp.								
Procladius sp.			6.4	11.0				
Procladius pupa								
Pseudochironomus sp.								
Tanypodinae pupa								
Tanytarsus sp.	6.4	11.0						
Tanytarsus pupa								
Ephemeroptera								
Caenis sp.								
Trichoptera								
Hydropsychidae			6.4	11.0				
MOLLUSCA								
Gastropoda								
Bulimus sp.								
Pelecypoda								
Amblema plicata								
Sphaerium sp.								
Station Total	82.8	67.1	1107.8	610.3	0.0	0.0		

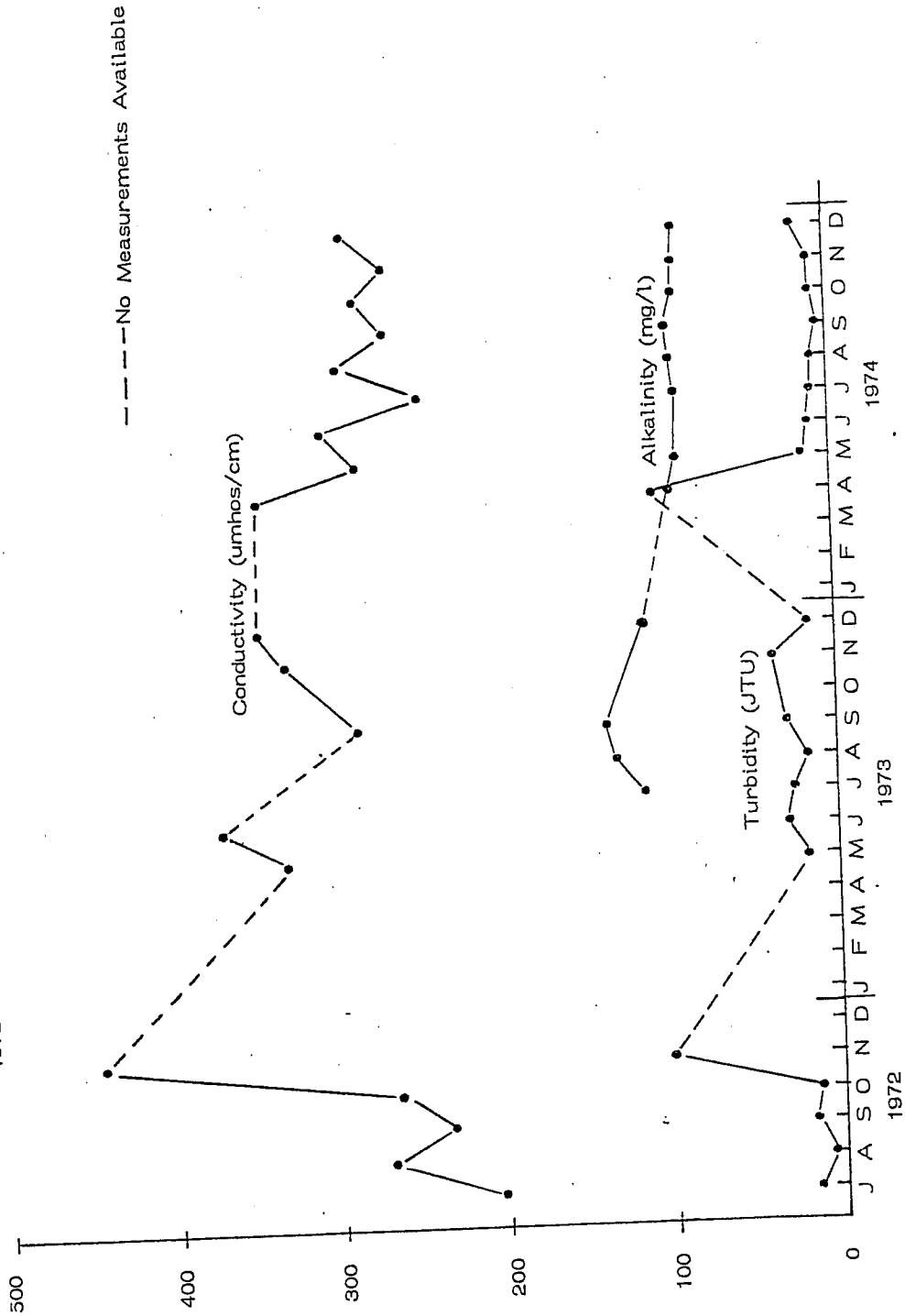
S.D. = Standard Deviation. Data presented as number/m^2.

APPENDIX IV

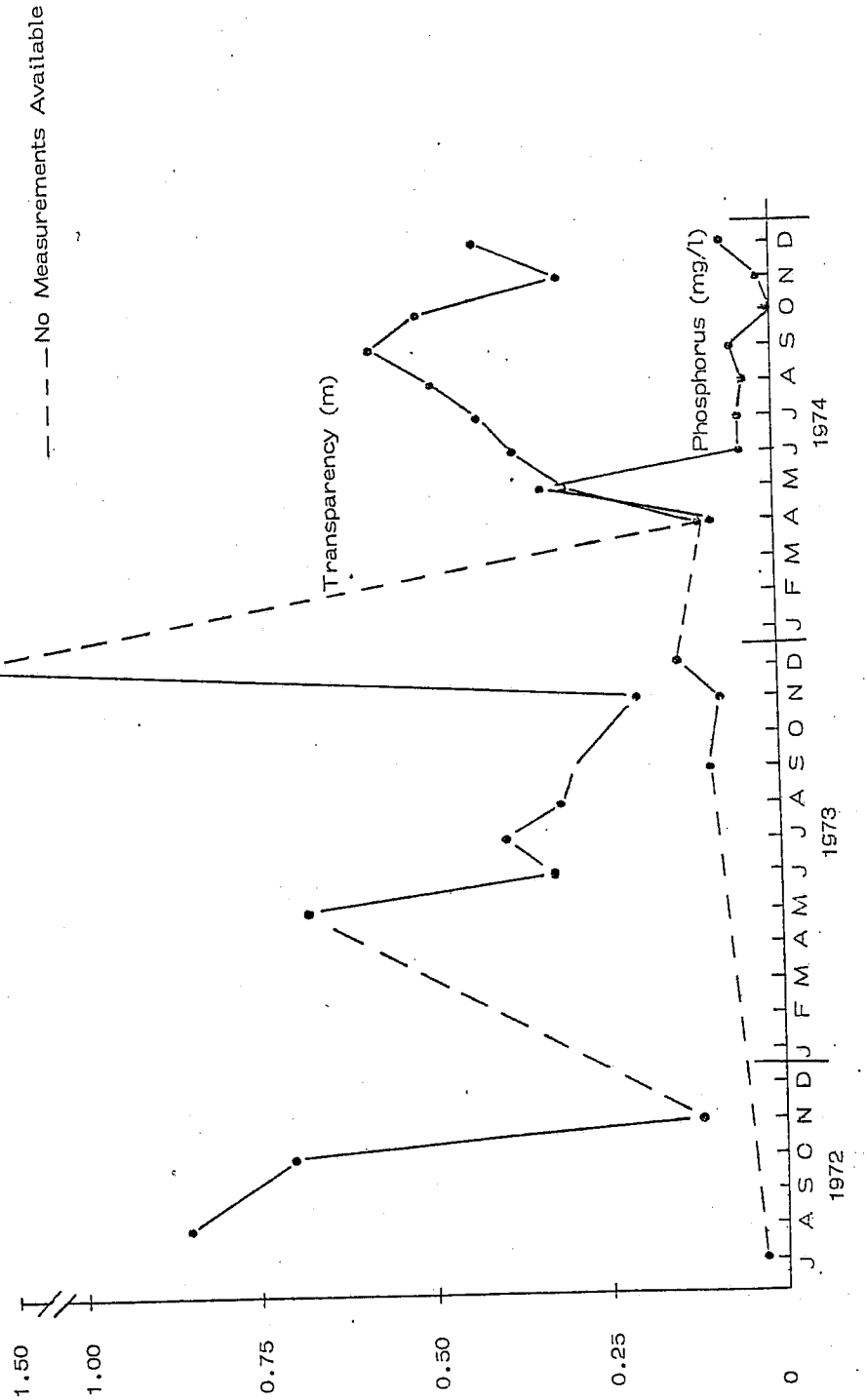
WATER QUALITY TRENDS AT LOCUST POINT
1972-1975

Water Quality Trends. The Ohio State University, Center for Lake Erie Area Research initiated water quality studies at Locust Point in July 1972. Trends for eight water quality parameters from that date through December 1974 are shown on these Figures. Temperature and dissolved oxygen show typical seasonal trends for each year with only minor variations from one year to the next. Dissolved oxygen appears to have undergone more depletion in 1974 than the two previous years. Hydrogen-ion concentration and alkalinity remained fairly stable over the three-year period. Transparency, turbidity, phosphorous and conductivity values have shown radical variations which are probably due to storms and dredging activities that have disturbed the bottom sediments. In general, no significant deviations from the normal quality of the water in this part of western Lake Erie have been observed in the past three years.

TRENDS IN MEAN MONTHLY CONDUCTIVITY, ALKALINITY AND TURBIDITY MEASUREMENTS FOR LAKE ERIE AT LOCUST POINT FOR THE PERIOD 1972 - 1974.



TRENDS IN MEAN MONTHLY TRANSPARENCY AND PHOSPHORUS MEASUREMENTS FOR LAKE ERIE AT LOCUST POINT FOR THE PERIOD 1972 - 1974.



TRENDS IN MEAN MONTHLY TEMPERATURE, DISSOLVED OXYGEN, AND HYDROGEN IONS MEASUREMENTS FOR LAKE ERIE AT LOCUST POINT FOR THE PERIOD 1972 - 1974.